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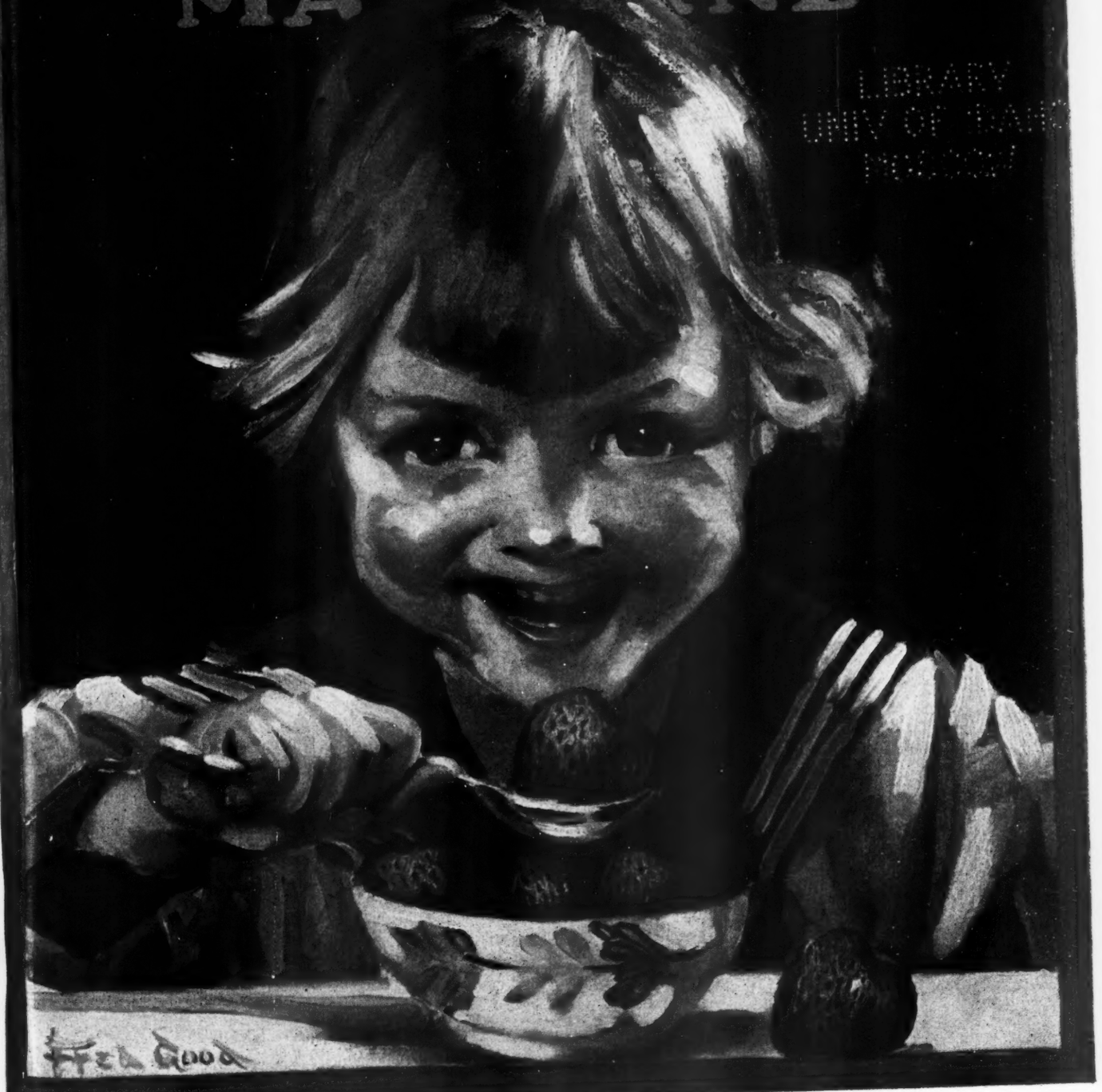

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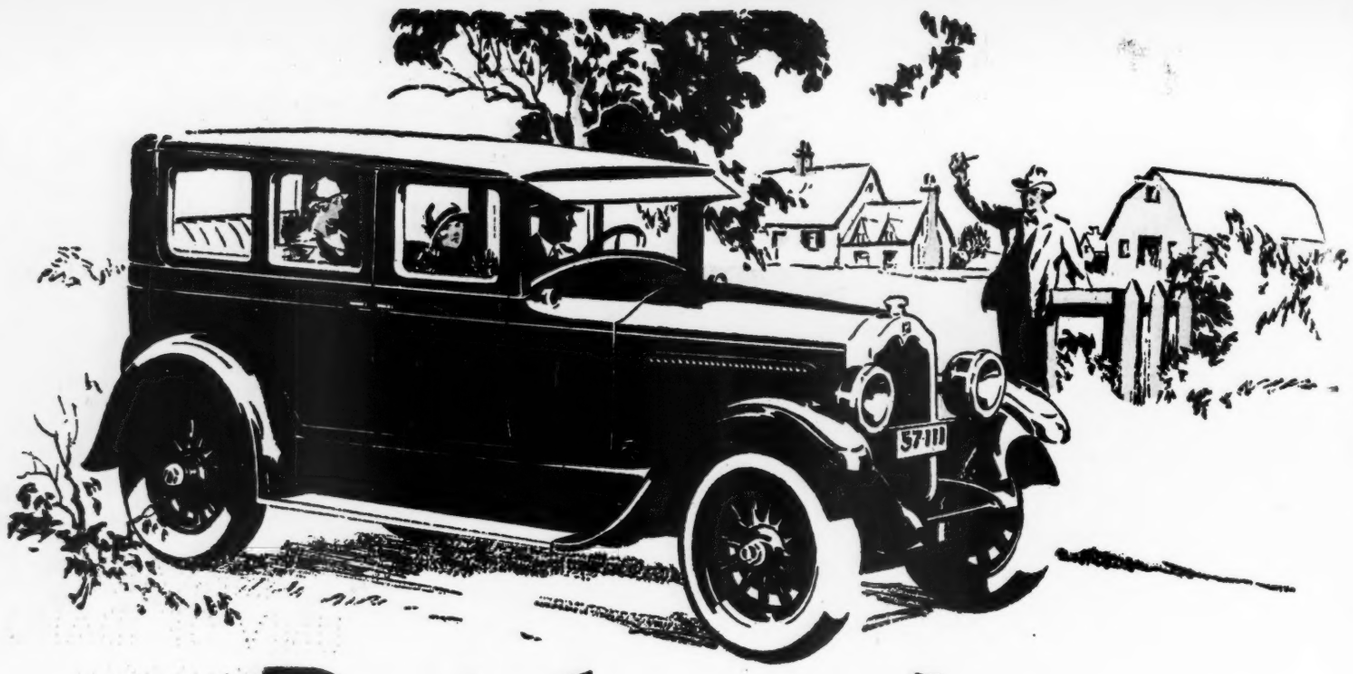

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Thinning the Peach Crop

By J. W. Lloyd

Illinois Agricultural Experiment Station

A properly thinned twig of Elberta peaches

THE MARKETS of the United States are supplied with peaches grown in at least 30 different states. The heavy peach movement starts with the ripening of the Georgia crop in May and June and continues from states successively farther north until the peaches from New York and Washington complete the season in September and October. On account of the double hazard of winter freezes and spring frosts, the volume of peach production is exceedingly variable from year to year. During the past 26 years the total peach crop in the United States has varied all the way from 22,000,000 to 64,000,000 bushels.

The production in individual states varies even more widely than that of the United States as a whole. Since the peach is a perishable commodity, market supplies are dependent almost entirely upon current receipts, though short-time storage is sometimes attempted. Supplies of peaches are by no means uniform through the season. A short crop or an abundant crop in one or more states may render the supply abnormal during a part of the season even though the crop for the country on a whole may be near the average for a period of years. Heavy offerings during a given period usually result in low prices during that period, even if the total crop of the country is light. In years when nearly all producing regions have heavy crops, prices throughout the season are likely to be low. The more abundant the crop and the lower the general level of peach prices, the more discriminating the market becomes.

Influence of Size of Peaches Upon Prices

In years of abundant crop, many peach trees are overloaded, and the individual fruits on such trees often fail to develop to normal size. When peaches are abundant and most likely to be of small size, the markets are most insistent in their demands for large peaches and are willing to pay a substantial premium for such fruit. In August, 1922, when a certain market was oversupplied with small peaches that were difficult to move at $1.25 a bushel, large peaches of the same variety were being sold readily at $2.50 per bushel in the same market.

Prospect for Peaches in 1926

The present outlook indicates that there are likely to be abundant peach crops this year in most of the important peach producing states. If these crops materialize, the markets will be very discriminating, and the only hope for the growers will be in the production of large, high quality fruit, free from blemishes and properly graded and packed. Small, poor fruit may not sell for more than enough to cover harvesting and marketing expenses, to say nothing of expenses incurred in growing the crop.

Necessity of Thinning

Every grower should therefore strive to produce large, perfect peaches. Peaches will not grow large unless properly nourished. Fertilizing and cultivating the orchard will assist in the nutrition of the fruits. However, if the fruit has set thickly on the tree, there is likely to be so much competition among the different specimens that none will become as large as it should. This means that for growing large peaches the fruit usually must be thinned. Part of the thinning may be done indirectly by careful pruning, but much of it must be done directly by actually picking off the surplus fruits.

Time to Thin

The thinning should be done immediately after the "May drop" in the South, or "June drop" in the North. At that time the fruits are quite small and the pits have not yet hardened. Hardening of the pits is a severe tax on the vitality of the tree. And since the object of the thinning is to reserve the tree's strength for developing the market crop, the precaution should be taken to reduce the number of fruits as early as possible.

How Severe to Thin

The more severe the thinning, the larger the peaches will be. Hence, in a year of a generally abundant set of fruit, when small peaches will sell at a bad discount and extra large peaches at a handsome premium, the thinning should be very severe. Under favorable growing conditions the previous summer, a peach twig may have developed two fruit buds at nearly every node. Often the nodes are only about an inch apart. If all the buds lived through winter, bloomed and set fruit, there might be fully 20 fruits on a section of branch one foot long. In such a case, at least 90 per cent of the fruit should be pulled off, for two peaches to the foot are as many as any tree should be allowed to bear, if large fruit is wanted. In fact, it would be better to have the fruits of such varieties as Elberta and Hale eight inches apart rather than six. Some growers have been known to thin their peaches three times before they succeeded in getting them thin enough. It is best to thin them right in the first place, but better to thin three times, if necessary, than to leave the fruits too thick.

What Specimens to Remove

When thinning peaches, care should be taken to remove any specimens that are inferior in size, deformed, insect blemished or showing scab spots, and enough other specimens to leave the fruits at the desired distance apart. Removal of defective specimens at this time reduces labor in sorting the peaches at harvest time. Tninning the peaches not only results in larger specimens, and eliminates many defective fruits, but it also results in the production of peaches of better flavor due to the fact that they have been better nourished.

Even a child can pick peaches from a low-headed tree

Method of Thinning

Although in some parts of the country attempts have been made to thin peaches by batting the branches with a padded pole, this is by no means an adequate method and is not to be recommended in the production of table peaches. The only sure method of securing a proper distribution of the fruits over the tree is to pick off the surplus peaches by hand.

Labor Involved

The labor of thinning peaches appears to be considerable; yet, since the fruits are usually dropped to the ground as they are picked, the work is done much more rapidly than harvesting the same number of peaches. The peaches need to be picked some

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Successful Blueberry Culture

By Charles S. Beckwith
New Jersey Agricultural Experiment Station

IMMENSE quantities of wild blueberries are marketed in many parts of the United States. They are popular and usually command a good price. In spite of this, a package of wild blueberries is simply a mixture of all kinds and sizes of the berries that a picker happens to find in a day's hunt in the woods. There is rarely any uniformity in the degree of ripeness of the fruit or in the packing. As a result, a considerable number of the berries reach the consumer overripe, shrivelled or otherwise unfit for use. Even with additional cleaning, it is difficult to sweeten them satisfactorily because of the lack of uniformity in their natural sweetness and ripeness.

The improved and cultivated blueberry is of unusually high quality and large size, as the parent plants represent either the best of many hundred thousand wild plants, or a selected hybrid resulting from a cross between two extra good wild plants. The propagation of all the plants of one variety from a single individual insures a uniformity in taste, color and, to some degree, size. By taking only ripe berries at each picking, the grower is able to place on the market packages with an even degree of ripeness throughout. The general excellence of the cultivated blueberry assures it great preference and almost a monopoly of the blueberry market as soon as it can be produced in sufficient quantity to supply the demand.

The blueberry successfully resisted domestication for many years, and it was not until Dr. Frederick V. Coville of the United States Department of Agriculture recognized the fundamental requirements of this plant that any progress was made. In addition, he developed some excellent hybrid varieties. Miss Elizabeth C. White, a co-operator of Dr. Coville, was successful in selecting good individual bushes from the many wild ones, and some of these are established varieties today. The two workers, together, have started a very interesting and what promises to be a very profitable branch of horticulture.

Propagation

The propagation of this plant is difficult and the common methods laborious, slow and expensive. Hardwood cuttings are held in cold frames for a year with fairly constant attention in order to start roots. After that they are put in nursery rows for a year before they are ready to go into the field. Only one nursery has attempted to raise plants in sufficient quantities for sale. Present information indicates that it will be next to impossible to raise enough cultivated blueberries to flood the market enough to break the average retail price below 50 cents per quart any time in the next 15 years.

Soils for Blueberry Culture

The wild high bush blueberry grows in spots from Maine to North Carolina and westward as far as Minnesota. The cultivated plant will do well in a similar climate, although winter killing may be rather common in colder areas. The variable freezing temperature of preferably mild winter seems to be necessary for proper development of this bush.

To you who want to know if the lower end of your wood lot or pasture or even one of your regular plow fields is suitable for blueberry growing, I can say no and make few mistakes. The blueberry plant is peculiar and particular as to its soil requirements, and one wishing to go into the business had better divorce himself from all other branches of agriculture and specialize in this one crop. It does go along fairly well with cranberry growing because of the similarity of soil requirements, but this is the only known exception. Of course, this rule does not apply to garden culture. Special care may be taken to prepare a place for 10 to 12 plants, thus assuring good growth, but such effort would be uneconomical in a commercial plantation.

Blueberry soils must be acid, probably more acid than soil for any of the ordinary cultivated crops. They must have a constant and liberal water supply, although the soil should not be saturated for any great length of time during the growing season. A light, open soil that holds moisture fairly well is much to be preferred. A mixture of sand and acid peat meets the requirements very well. Clay soils and neutral or alkaline mucks have proven unsatisfactory.

The commercial plantations up to date are mostly on the Atlantic Coastal Plain, especially in New Jersey, Long Island and Massachusetts. Regions with similar soil are present in the region south of the Great Lakes. Usually an area with its natural growth present is selected, and the indication of the soil condition thus furnished is reliable for all practical purposes. The presence of the wild high bush blueberry (*Vaccinium corymbosum*, L.) shows that the soil will grow this plant and when found growing profusely in places that can be cleared and cultivated economically, it indicates one of our best blueberry soils. A solid growth of leather leaf (*Chamaedaphne calyculata*, L.) is a good indication, provided there is at least two inches of well decayed peat above the sand. Pine land with an undergrowth of sheep laurel (*Kalmia angustifolia*, L.) is satisfactory, although it may need irrigation in a dry season. A cedar swamp has deep peat, too deep to be profitably worked, although a mixed growth of pine, maple and cedar indicate peat about six inches thick and a site excellent for our purpose.

Reports indicate that blueberries are being cultivated near the Columbia River. The natural vegetation there shows that the soil is somewhat similar to that of the eastern fields. The river valleys in New England are being used to a limited extent, but it is too early to give any results as yet. No doubt, the soils that grow any of our common huckleberries or blueberries naturally can be made to grow our high bush blueberry, but until methods are worked out commercial plantations there are a gamble.

Land suited for blueberries is not at all scarce, but the known areas are localized in some of the sparsely inhabited parts of the eastern states. Much of this land is idle now, as it is unsuited for other agricultural crops. As fast as plants can be produced, large acreages will probably be put under cultivation, and possibly by the time that is done methods will be worked out for growing blueberries on other soids.

A cluster of Rubel blueberries (natural size). The uppermost berries of a cluster reach full size and ripen first, with those at the base following in due time

Preparation of the Land and Planting

The site is prepared by clearing off all the vegetation and by draining and plowing the soil. Clearing is accomplished by the usual methods available, and drainage is secured either by open ditches or tile drains. It is customary to keep the land fallow for one year previous to planting in order to bring the soil into good condition and eliminate weeds.

The plants as sold are about eight inches in height and have a well formed root ball. They should be heeled in or planted on receipt of order to prevent undue drying of the roots. They are commonly planted in rows eight feet apart, with the bushes four feet apart in the row. This allows for harrow cultivation between the rows but necessitates hand hoeing along the rows to keep out wild growth. Possibly spacing the plants six feet apart in the row would allow sufficient space for cross harrowing and eliminate hand hoeing.

Like most other fruits, blueberries will not set a good crop of fruit unless at least two varieties are planted together. The planting of alternate rows of two varieties ripening about the same time is a desirable practice, although some plantings have been made using two or three rows of one variety to one of another.

General Care

Clean culture is invariably practiced in the blueberry fields. Frequent cultivation with one 12-tooth section of a spring tooth harrow works out very well if the teeth are set to cut one and one-half to two inches deep, for the roots are near the surface.

Commercial fertilizer has proven very beneficial to blueberry plants. A special mixture has been devised analyzing approximately 4-18-5, made up of 100 pounds nitrate of soda, 260 pounds rock phosphate and 40 pounds sulphate

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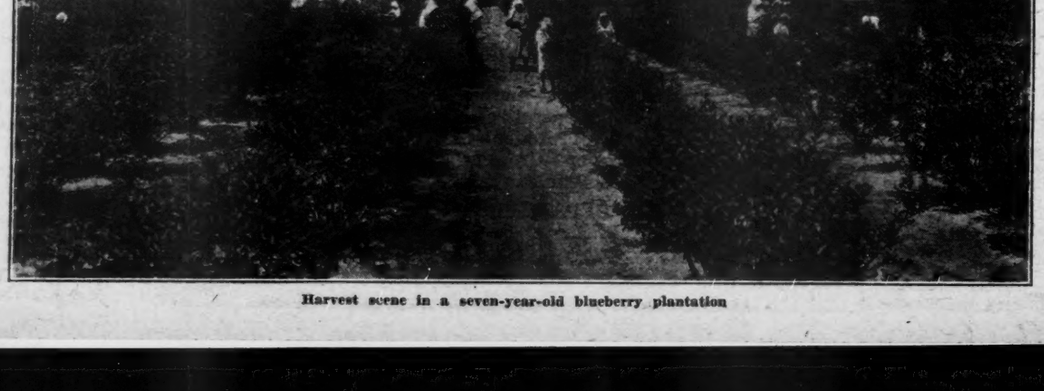

Harvest scene in a seven-year-old blueberry plantation

Preserving the Strawberry

By W. W. Chenoweth
Massachusetts Agricultural College

TO MOST people the strawberry is a delicious fruit to be eaten with sugar and cream and in short cake. To those who know this fruit well, there are many varieties differing in color, size, shape, taste, flavor and adaptation to a variety of uses. Most varieties are at least passably good when eaten as fresh fruit, but only a relatively few are adapted for preservation.

Those varieties which are best adapted to canning and preserving are characterized by a dark red color which persists to the very center of the fruit and which have a subacid taste. Those varieties that have a light red or pink color with white core will fade to a pale straw color when canned and will not make the most attractive jams and marmalades.

Among those varieties that are well adapted to preservation are Howard 17, Senator Dunlap and Highland. There are no doubt many others, but these are the leading varieties grown in the East.

Medium Sized Berries Best

As a general rule, medium sized berries are best for canning and for preserves. They pack best in canning and are most easily handled in making preserves. The large overgrown berries, the small ones, those that are too soft, and those of poor shape, will work up well in jams and marmalades. If a quantity of berries is being handled at a time, it is well to sort and grade, using the grade for each product best adapted for it.

In preparing strawberries for preservation, it is always best to remove the hulls or calyces first. This may be done with thumb and finger, or better with the tin clips known as strawberry hullers. The rinsing or washing in cold water should be done immediately after the hulled berries are to be used. There are good reasons for this method of procedure: (1) In some varieties the calyx fits so snugly that sand or soil will be held if the fruit is washed first. (2) The action of water on ripe strawberries is such as to soften them very quickly. (3) They should be washed after hulling for sanitary reasons.

Strawberries with green tips should not be picked or bought because, as a rule, they are not ripe enough to have developed their highest quality. Fruits of low quality cannot be taken into the kitchen and made into high quality products.

Strawberries canned in the usual way, that is, by the can cooked method, are a sad disappointment to most home canners. The fruits are tender and when heated they collapse and shrink to half or less their normal size, so that after standing a few days in the jars the shrunken berries floating up in the heavy syrup occupy the upper third or half of the jar while the lower part is filled with syrup only. Despite this fact, many will wish to can their strawberries in this way.

Pack the Jars Carefully

The prepared berries are packed into clean jars as tightly as possible without crushing, packing the jars rounded full. The jar is then filled to within a half inch of the top with the syrup. All air must be displaced from among the berries. This may be done with a quick rotary movement of the jar as it sits on the table, first in one direction and then backwards. The syrup may be made by taking two cups of water and one cup of sugar and heating until the sugar is dissolved. This will give a subacid taste to most berries. If desired sweeter, omit one cup of the water.

The packed jars are partially sealed and processed in the water bath for 14 minutes for pints, and 16 to 18 minutes for quarts.

Another method whereby the shrinkage is secured before the fruit is packed and in which no water is added has come to be used by many. The amount of sugar to allow per quart of fruit will be determined largely by the acidity of the fruit and the taste of the consumer. As a general rule, four to six ounces per quart will be found satisfactory.

Alternate Layers of Sugar and Berries

The prepared berries and sugar are stratified, that is, they are placed in a crock or agate vessel in alternate layers, enough sugar being reserved to thoroughly cover the last layer of fruit. They are then set aside for 12 to 18 hours. During this period the sugar causes some of the juice to flow from the fruit in which the sugar dissolves, forming a heavy syrup. If at the end of the standing period there are cakes of sugar among the berries which do not dissolve by gentle stirring, the vessel should be set on a slow fire and heated to about 150 degrees Fahrenheit. The sugar will quickly dissolve and the berries are ready to can. The fruit and syrup are filled into clean jars, filling to within one-half inch of the top. The jars are partially sealed and are processed in the hot water bath, pints 15 minutes, quarts 20 minutes.

Jam

While most varieties of strawberries will make good jam, those that are subacid and that have a deep red color will make jam of the highest quality and of most attractive appearance.

The prepared fruit is placed in a cooking vessel and a few or all of the berries are crushed. Heat is applied slowly until the juice flows freely, then the boiling is carried on more rapidly until the pulps begin to thicken, that is, they will round up on the stirring spoon and there is very little free juice. During the last stage of boiling, constant stirring is necessary. At this stage the sugar is added. The amount may be varied to suit the individual taste, but eight to 12 ounces per quart of fresh fruit will give a high quality product. The cooking is continued at rapid boiling with frequent stirring until the boiling jam will heap up on the spoon or will flow from the spoon in sheets or flakes.

The finished jam is removed from the fire and allowed to cool for five minutes or longer, stirring occasionally. When the foam or froth has disappeared, it is filled into clean jars. The jars are filled full, partially sealed and processed in a water bath for five minutes.

If jam is to be stored in open top or paraffin sealed containers, the amount of sugar must be increased to one pound per quart of fresh fruit.

If it is desired to have a large number of whole berries in the finished jam, enough water is added to barely cover the bottom of the kettle and half of the sugar is added at the beginning of the cooking period. The sugar will tend to toughen the berries and will prevent their breaking up.

Preserves

There are two general methods of making strawberry preserves, namely, uncooked or "sun-cooked" preserves and cooked or boiled preserves. Both methods produce delightful products which differ much in appearance, taste and flavor.

Uncooked or sun-cooked preserves are made by placing the prepared berries in shallow trays or pans and pouring over them a heavy syrup made by heating together one-half cup of water or strawberry juice and one pound of sugar for each quart of fresh fruit. These pans of berries and syrup are, as a rule, covered with glass and set in the sun outdoors, or

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Ancient Practice Revived by Fig Growers

By Robert W. Hodgson
University of California

AN INTERESTING instance of the rediscovery or revival of an ancient horticultural practice came to the notice of the writer some months ago, the same being the use of bud pruning or pinching of fig trees in the Coachella Valley of California. In order to make clear the economic considerations which have lead to the revival of this ancient and long since forgotten practice, and which render it practicable, it is necessary to trace briefly the development of fig culture in that section and the behavior of the fig tree under the unique climatic conditions which prevail there.

Tree Grows Well

The fig was one of the first fruits planted in the Coachella Valley when development began some 15 or 20 years ago, and as might have been expected of this drought and heat resistant fruit, it was found to thrive wonderfully. Given a reasonable amount of water, under the long growing season and the intense heat of the desert, the fig tree responded by a truly marvelous growth. Planted out as cuttings, in three years they reached twice the average size for trees of the same age in other parts of the state. It was found, in fact, that the trees hardly went dormant at all, continuing to grow vigorously well into December and starting into active growth again in February, after a rest period of six weeks or so, as compared to the normal rest period in other parts of the state of perhaps four months.

Three Crops Normally Produced

And not only was the tree found to grow wonderfully well, but in common with nearly every other crop grown in the desert, it shared the advantage of very early maturity of the fruit. The first crop, normally ripening in other parts of the state in late June or July, was found to reach maturity during the first 10 days of May, in some seasons even earlier, or at least a month and often six weeks in advance of the rest of the state. In addition to the unusually early first crop, and doubtless another result of the long growing season, the fig was found in the Coachella Valley to bear three distinct crops instead of the two normally produced in other sections of the state. And this third crop was found to mature much later than the second or last crop elsewhere, coming along in October or November.

A result of complete bud pruning of the fig—much fruit, few leaves

Advantage of Early and Late Crops

To summarize, the fig growers in the Coachella Valley learned that they possessed two distinct and unique advantages over growers in other parts of the state, advantages granted by Dame Nature perhaps somewhat as recompense for the discomforts and fortitude required in overcoming the desert. They found they could produce both earlier and later figs than can be grown elsewhere. Obviously, since both crops are out of season and therefore not in competition with those of other sections, the prices received for these crops average higher than those received by fig growers in other parts of the state. This has been especially true with the first crop, which normally reaches the market a little ahead of even the earliest apricots or peaches and for which the growers have frequently received from $3.50 to $5 per crate of seven pounds, although the average is somewhat lower. The second crop, maturing about the time that the first crop is harvested in the other fig growing sections of the state, has never been especially profitable, and moreover, on account of the intense heat of the mid-summer, is of lower average quality than the first crop and is frequently injured from sunburn.

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Thinning Fruit Should Pay This Year

IT IS too early yet to draw final conclusions regarding the prospects for fruit crops, especially in the more northern fruit sections. At this time, however, the prospects are good for one of the largest fruit crops in the history of the country.

In view of the outlook, we feel sure it will pay to thin tree fruits this year, except possibly in the case of trees which have a light setting. Even in such cases, thinning often is advisable in order to bring about more uniform distribution of the fruit.

In the case of peaches in particular, we think thinning is highly advisable this year. There are prospects for a large peach crop. Since the crop is quite perishable, and since there is a tendency for the supplies to be large during certain periods of the season, thinning is particularly to be recommended. Little peaches will probably not pay for the cost of harvesting and packing in many cases. Large peaches that are sound and well matured are practically certain to pay, no matter how great the supplies may be.

We hope every peach grower will read the article on peach thinning in this issue by Dr. J. W. Lloyd of the University of Illinois. Dr. Lloyd understands the marketing problems of the fruit industry as well as those of production. Furthermore, he has a commercial fruit farm, including a peach orchard, of his own. He is, therefore, in position to view the question from a well-balanced standpoint. If a large majority of the peach growers of the country would follow his recommendations, we are positively sure they would profit materially from the same this year, and they would also encourage the formation of a better set of fruit buds and bring about a better condition of the trees from the standpoint of next year's crop.

No Prospects for Reduced Production Costs

THERE are no prospects for material reductions in the cost of farm labor for the present season, according to the United States Department of Agriculture.

The price of farm labor rose slightly during 1925, standing two to three per cent higher on January 1, 1926, than on January 1, 1925. Industrial conditions in the cities are quite active at the present time, and there are no prospects that there will be an over-supply of labor in cities, causing many of the workers to go to the country to labor during the summer months. Even if there should be a reduction in industrial activity by the middle of the season, it would be too late to cause reductions in farm labor prices until fairly late in the fall.

Most lines of farm machinery are costing practically the same as a year ago. Building materials were slightly higher at the close of 1925 than at the beginning. Prices of lumber have been slowly increasing. The indications are that the cost of farm equipment and upkeep will remain at practically the same levels as exist now as long as industrial conditions in the cities and the purchasing power of farmers do not change materially.

Luther Burbank

LUTHER BURBANK has entered the great beyond. He died in his home at Santa Rosa, Calif., on April 11, in his seventy-seventh year. With due honor, his body was buried among the trees and plants he loved and knew so well.

Mr. Burbank lived one of the most useful lives that America has ever known. The numerous varieties of plants which he developed have made the country and all of its people happier and more prosperous than they would have been without his work. Some people may question the scientific nature of the methods employed by Mr. Burbank, but no one can deny that he developed many plants which were improvements over other varieties in existence. Thus, whether he was deeply scientific or not, he was a great benefactor of the country from an economic standpoint. Furthermore, he was without question a great inspiration to many persons who were interested in plant development. While other events, such as the rediscovery of Mendel's law in 1900, undoubtedly had great influence in stimulating the study of plant development, there can be no question but that Mr. Burbank's results also had a marked share of influence. He lived a most useful life, and all honor is due him for the benefits which he accomplished for mankind and for the inspiration which he brought to many persons.

An Event of Importance in Co-operative Marketing

WHILE outside of the fruit growing field, an event of great significance to the co-operative movement in America took place during the past month. The Saskatchewan (Canada) wheat pool has acquired control of a string of 500 grain elevators formerly owned by the Saskatchewan Co-operative Elevator Company. The consideration was $15,000,000, it is reported.

This move will unite the efforts of two organizations. The result will be one of the most powerful co-operative marketing organizations in the world, one which will have great influence in grain marketing and which should exert some influence on the marketing of other crops and on the growth and welfare of the co-operative marketing movement in general.

Darrow's Article Explains Root Action

WE WANT to call particular attention to the second installment of George M. Darrow's series on strawberry culture in this issue. This article pertains especially to the action of strawberry roots and their functions. Mr. Darrow goes into the matter thoroughly, and he explains in a clear and practical manner the principles involved in root action. The information which he gives applies to all other plants as well as to strawberries, and we hope that all growers will read this article whether they are particularly interested in strawberries or not. A better understanding of root action will give all of us a clearer conception of the action of soil moisture and fertilizers and of plant growth in general. Mr. Darrow's article contains information that will help anyone to secure a better understanding of these matters.

State Standardization Laws Cause Confusion

IN RECENT issues we have called attention to the discrepancies which exist between different state laws with reference to package standardization and between some state laws and those of the federal government.

For example, the use of 28-quart hampers is illegal in Texas, New Jersey, Indiana, Ohio and the District of Columbia. However, since there is no federal law covering the matter, southern fruits and vegetables packed in 28-quart hampers entering these states cannot be touched by the authorities because they are on an interstate commerce basis. The retailers who purchase such products sell them in small lots instead of by the hamper. Thus they avoid conflicts with the state law.

Likewise, the weight per bushel laws cause trouble at times. Indiana, for instance, has a law establishing standards for practically all types of fruit and vegetable baskets, including round stave baskets. It has another law establishing a weight of 48 pounds for a bushel of apples. Last year apples packed in standard bushel baskets in Michigan were trucked to South Bend, Ind., and sold at retail. The container was legal under Indiana laws, but it did not carry the 48 pounds required for a bushel of apples in Indiana, and the authorities therefore objected to sales being made. Since 48 pounds of apples cannot be placed in a closed basket, the absurdity of such state laws is apparent.

The only scientific basis for packing standardization is standardization on the basis of volume and dimensions. Weight per bushel laws should be repealed. Uniform national laws should be adopted for all types of packages. State laws covering package standardization would then be unnecessary. The package standardization bills now before Congress deserve the support of every fruit grower.

Growers Advised to Follow Standard Spraying Schedules

THE POSSIBILITIES of using oil sprays for general spraying during the growing season have not been fully determined, according to the New York Agricultural Experiment Station. However, there is no evidence that the continued use of two per cent oil emulsion will prove deleterious to the trees. The type of oil used, the strength of the spray in regard to oil content and the condition of the weather at the time of application appear to affect materially the results obtained. The highly refined white oils, which resemble the kinds used for medicinal purposes, seem to be safer for use on foliage during the growing season than the lubricating oils. However, such oils are more expensive and their insecticidal value has not been fully determined.

The experiment station advises growers to play safe and adhere rather closely to standard spray practices, leaving to experiment stations the task of trying out new preparations.

Essentials in Strawberry Culture

Part II—The Strawberry Root and Its Functions

By George M. Darrow
United States Bureau of Plant Industry

LAST month we told the story of the modern strawberry, of its travels from America to Europe and back again, and of the important parts played by six great men in its making. In studying the life of the plant itself, however, we study the discoveries of hundreds of investigators working along many lines with many different plants and in all parts of the world. Little by little they have added to our knowledge of the structure and functions of each part of the plant. Each year brings additional discoveries which help us to get a clearer picture of the way in which each organ of the plant functions to produce the berries and crops we desire. Such discoveries are not generally as spectacular as those discussed last month, but they are, nevertheless, just as essential.

The functions of the root system of the strawberry are to anchor the plant firmly in the soil and to supply the plant with water and with dissolved minerals which the leaves build up into foods. With each of these functions we are concerned. In sections where alternate freezing and thawing of the soil occurs many times during the dormant season, the character of the root system is important if the plant is to survive. The plant and fruit are largely water, and water can enter the plant only through roots. Dissolved minerals are necessary for growth, and these also enter only through the roots.

The Strawberry Root System

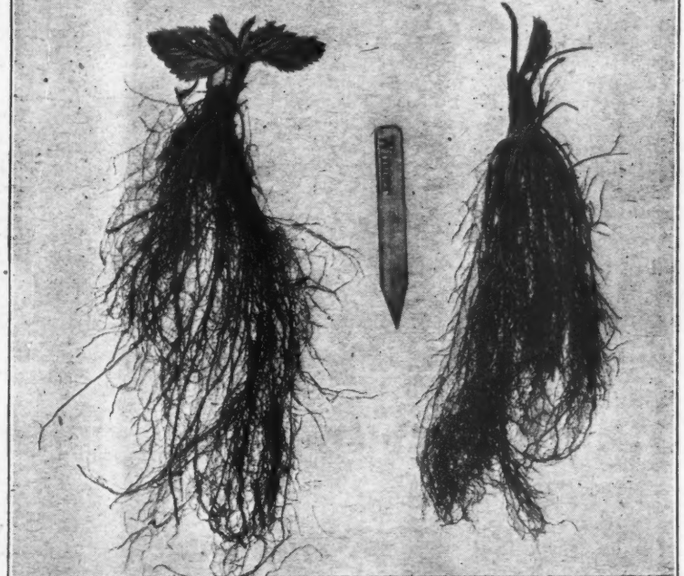
A typical strawberry root system is made up of from 20 to 35 fibrous roots starting from the crown. These branch and rebranch until there is a root system made up of thousands of minute rootlets. This root system is comparatively shallow and, under ordinary conditions, is confined mostly to the upper foot of soil. The late Prof. E. S. Goff, of Wisconsin, in a study of the strawberry root in Wisconsin, found it confined almost entirely to the upper foot of soil. Under exceptional conditions, however, it may go much deeper. What happens in the upper foot of soil is, therefore, most important.

Roots show four distinct regions—the tip, a region of growth, a region of absorption, and a corky covered region of conduction. The tips of all live roots are white and very soft. Just back of the tip is the region of growth where the root elongates, pushing the tip through the soil. Further back is the absorbing region which, especially when the water supply is slightly scant, is covered with thousands of minute one-celled root-hairs. These root-hairs penetrate the soil in all directions and come into very intimate contact with particles of the soil. Water and dissolved substances can enter the root-hair much more rapidly than they can enter the surface cells of young roots. Through the great absorption surface which these expose, and through the absorption surface of the young root itself, water and dissolved minerals are taken into the plant. Back of this absorption region the root shows a well organized structure with a more and more corky and impervious outer layer and with long, large cells near the center, which serve to conduct the water to the crown and leaves. The older roots also contain more and more fibrous tissue which makes them tough.

Wherever alternate freezing and thawing of the ground occurs during late fall, winter or early spring, there is more or less breaking of the strawberry roots. Sometimes plants are even pulled entirely out of the ground by this action. As the ground freezes, it expands. The more water it contains the greater the expansion. If it freezes to a depth of two to four inches, the tops are forced up and the roots may be pulled apart. Usually some young roots are broken while the older, tougher portions back of the absorption layer are pulled upward. With each repeated freezing and thawing they are pulled farther and farther out of the ground. Mature plants, however, which have a large number of long fibrous roots, may be so strongly rooted as to resist the upward expansion of freezing soil. Young plants which have short roots with few branches are often found entirely out of the soil lying on top of the ground after a few thaws. In soils and in sections where this is likely to occur, a good stand of plants should be secured early in the season and a heavy mulch of straw, pine needles or other material applied as soon as the first freeze occurs. Fall planting should not be practiced where there is danger of heaving, because the root system will not have become well established by the following spring.

Although most of the water enters the plant through the root hairs and the outer layer of cells in the absorbing region, water can be taken in through the older portions of the root—much more slowly, however, than at the root-hair zone. This fact is of great importance in the digging, handling and resetting of plants. All of the younger, smaller rootlets should be in good condition when a plant is set. Therefore in digging, as much as possible of the root system should be preserved; the plants should be so handled that the younger roots are not dried or injured before being replanted; they should not be pruned back unless the mass of roots is too large to replant easily; and the soil should be thoroughly firmed about the root to prevent its drying. Root-hairs are so delicate that they collapse and die almost instantaneously when exposed to dry air. The younger, smaller rootlets collapse and die next, while the oldest portions of the roots dry out last. Water can be re-absorbed quickly and in quantity only through the younger portions of the root system, and, if little drying has occurred in transplanting, there will be little check in the growth of a plant. With prolonged exposure, all but the oldest parts of the roots die and through such parts water can only be absorbed very slowly. Unless all the foliage is removed from plants in this condition, they usually die.

Of all materials absorbed, water is the most necessary to the plant and is taken up only by the roots. Water is needed to replace that lost through transpiration; oxygen, which is needed by the roots, and the dissolved minerals, can enter the plant only when water is present; the plant foods manufactured by the leaves is transferred in solution to all parts of the plant as well as to the developing berries; water holds all the soft parts of the plant turgid (as is demonstrated when they wilt); and small amounts of water are used up by the plant in manufacturing plant foods. Some knowledge of the absorption of water and dissolved minerals is necessary to an understanding of the functions of roots.



These characteristic root systems of the Winner strawberry are typical of the root systems of strawberries in general

How Water Is Absorbed

Roots, as well as leaves and all living matter, are composed of enormous numbers of minute cells, usually far too small to be seen without the aid of a microscope. A root-hair, however, is composed of a single cell and may sometimes be clearly distinguished by the unaided eye. It, as well as all plant cells, has an outside cell wall composed of cellulose, which is easily penetrated by water. Within this cell wall the mature cells have a large cavity filled with water in which many substances are dissolved.

The passage of water through the cell-wall of a root is explained by physical chemists as a purely physical process. If water is poured carefully into a tumbler containing a sugar syrup or molasses so as not to disturb it, it will, nevertheless, finally mix completely with the syrup. When water containing a slight amount of sugar or other dissolved substance is separated by a cell-wall from a denser solution of the same material, the transfer of water from the latter to the former is explained as due to the difference in the concentration of the materials in solution on each side of the wall. Water passes through a cell-wall readily and always goes from the side of the weaker to that of the stronger solution. The greater the difference in the total concentration of the two solutions, the faster the rate of movement of the water through the cell-wall. Commonly, the water solution in the soil is less concentrated than that in the root-cell, and water, therefore, enters the root from the soil. If the water in the soil is the more concentrated, it may withdraw water from the roots, causing the plant to wilt and die. This may actually happen if too much nitrate of soda is applied to a strawberry field. In alkaline soils, this may also happen. All the plants native to, or successfully grown in such soils, always have a high cell-sap concentration. A demonstration of the effect of a too concentrated soil solution is readily made by placing the roots of a growing plant in a tumbler of water to which a couple of teaspoons of sugar have been added. The roots will be unable to take in water and will actually lose water. In a few minutes the plant wilts.

Water also enters the roots because of another physical force, the attraction between water particles.

How Minerals Are Absorbed

In addition to water, the roots take in all the dissolved minerals needed in the elaboration of plant foods by the leaves. Everything passing into the root must be in solution. Thus materials not in solution cannot enter the root and are of no direct value to the plant. Dissolved minerals diffuse through the cell-wall and enter the root-cell independently of the entrance of water. Each dissolved substance has its own rate of movement. The mere fact that the plant is using large quantities of water does not mean that it is taking in large amounts of minerals, or any at all. If the cell-sap contains less of any dissolved minerals than the soil water surrounding it, some of that mineral enters the root in solution. When the plant is growing, dissolved minerals from the cell-sap are used up in the leaves and more enters at the root of the plant to replace it. It passes through the absorbing cells to those nearer the center of the root and from cell to cell until it reaches the central water-carrying system through which it passes to the leaves.

The soil water may contain nitrate of soda, acid phosphate, sulphur and many other substances in solution. Each substance behaves to a large extent independently of all others in its entrance into the plant. This is due to the characteristics of the substances themselves. Many dissolved substances cannot enter the root at all or can only pass through slowly. If nitrate of soda is being used by the plant rapidly, it may enter through the absorbing surface rapidly. At the same time, however, sulphur, iron and other substances may be used at low rates, their concentration in the cell-sap may decrease very slowly, and in turn their entrance through the cell-walls of the root-hairs may likewise be slow.

To summarize, the roots and root-hairs penetrate the soil in every direction. Surrounding the soil particles is a film of water in which is dissolved various minerals. The cell-sap of the root-hairs and of the exterior cells of the younger roots commonly has a greater total concentration than has the soil water. Water, therefore, passes into the roots that are in contact with the soil particles, and as long as the total concentration in the root is greater than that in the soil and the soil is not too dry, this movement continues. The dissolved minerals enter the root-hairs independently of the entrance of water and, to a large extent, of each other, but they depend on the concentration of the solutions on both sides of the cell-wall for the rate of entrance.

Roots, then, are organs for the en-

(*Concluded on page 23*)

Crowley's Ridge—New Arkansas Peach Belt

By Charles F. Warren

CROWLEY'S RIDGE is an empire within an empire! It is a strip of territory three to 15 miles wide, extending from the Missouri line through a tier of eight counties almost straight south to Helena, Ark., where the ridge is terminated by the Mississippi River. The north end of the ridge is 60 miles from the same river. In height, the ridge varies from 50 to 200 feet above the surrounding St. Francis and Mississippi Valleys on the east and the level country extending west.

Before the time of the Mississippi levees and the drainage ditches which now form a network in the rich valleys on the east, Crowley's Ridge used to be the mecca of the early settlers, who dotted its then fertile slopes with plantations which were safe from the ravages of the Mississippi overflows. As the pioneer engineers mastered the great river and drained the land, the ridge settlers deserted their hill farms for the more fertile soils of the valley, until in time the ridge became the mere skeleton of a prosperous era.

Leaching and Erosion Resulted From Neglect

The deserted slopes began to leach and erode. The wonderful clay loam top soil of the hills was carried down to enrich the already fertile valleys. Fortunately, only a small per cent of the hill lands had been cleared, and a part of that which had been, became rewooded. With the rapid influx of people from other states, the ridge lands again were in demand, and they became thickly populated. But this time it was by those who were not able to buy the more fertile valley farms, or the equipment necessary to run a hill farm. They did not understand how to prevent soil erosion, and so for 50 years these farmers have tried in vain to raise cotton in competition with the valley farmer. In some way they have managed to eke out an existence, but only once in a while do we find a man who has learned the value of the rich soil and who has made a real success. The ridge soil is of the same character to a depth of 50 to 100 feet, and the man who has learned what to do with it is prosperous. But the average hill farmer, and the valley farmer too, for that matter, is cotton sick and has been for many years.

This article is not a treatise on cotton sickness, but deals with the opportunity which has knocked at the door of the Crowley Ridge farmer, an opportunity which tired of waiting for more than a quarter century and just opened the door two years ago and walked right in. And here is how it all happened.

Peach Growing Possibilities Discovered

The awakening on Crowley's Ridge has as its foundation the planting 26 years ago of a 20-acre Elberta orchard on the farm of W. R. Simmons, five miles south of Wynne, Ark. During the first two years of the life of this orchard, all but six acres fell by the wayside for one cause or another while the new orchardist was learning how to properly care for his trees. The six acres surviving owe their existence to the fact that they were cultivated while the other 14 were not. Those six acres commenced to bear when they were two years old and have produced 23 crops out of a possible 24.

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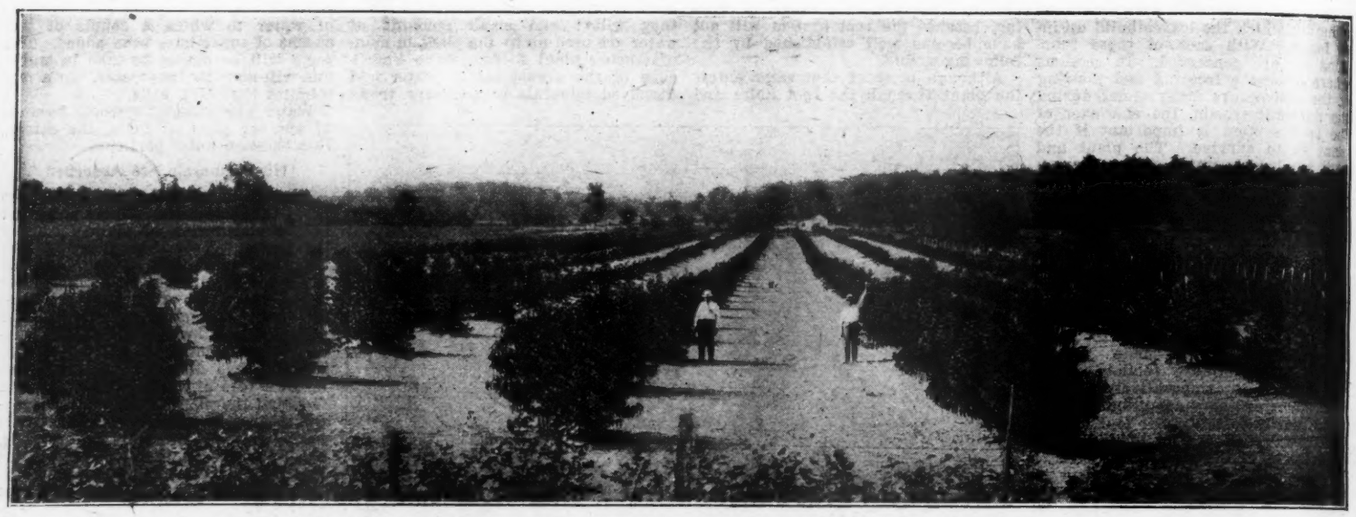

Seventeen-month-old peach orchard of Joe L. Burns at Jonesboro, Ark. The cultivation methods shown in the picture are characteristic of all the orchards located on Crowley's Ridge

Propagation of Fruit Plants

Part VI.—Some Disputed Points

By W. H. Alderman

University of Minnesota

THERE are a number of questions in connection with fruit growing, plant propagation and nursery practice that have long been subjects for argument. It would seem that after 25 or 50 years of discussion some of these questions would be either forgotten or decided one way or the other. Most of them are pretty well decided, as a matter of fact, but the answer is not generally known or recognized by practical growers. It is equally true that some of the questions are still open for discussion and the answer is not yet formulated.

Will Varieties Run Out?

For a century or more this question has been more or less before the attention of horticulturists. Within the last few years it has opened up with renewed vigor in some regions. Varieties of fruits have flourished and enjoyed wide popularity and then have disappeared. Fruit growers have succeeded with certain varieties of raspberries and then have seen their plantations dwindle in production and their stock of plants gradually so weaken in vigor and production that the variety is discarded. The same thing has happened with potatoes, strawberries and other horticultural crops.

What is the explanation for such behavior? Do varieties propagated by cuttings, layers, grafts or buds actually run out? We have numerous examples of varieties which have apparently maintained themselves for a long period. A notable example is the Yellow Egg plum which can be traced back into European culture for two and a half centuries. The Rhode Island Greening apple of our own country has enjoyed a well deserved popularity for two centuries. The famous Albemarle Pippin or Yellow Newtown is apparently the same apple today as it was in 1759, when Benjamin Franklin first exported it to Europe. Numerous illustrations of this kind are available to indicate that some varieties at least have not run out.

Set over against this condition is the undeniable fact that certain varieties under some conditions have apparently ceased to produce well and have been discarded. In recent times it has been discovered that some of this running out has been due to the inroads of disease. At present the raspberry mosaic is a serious disease among raspberry growers. Varieties have been entirely discarded in certain regions because they have ceased to yield profitable crops. These were said to have run out, whereas, as a matter of fact, they had become badly infected with mosaic disease. Their vitality was thereby impaired and their usefulness destroyed. It has been clearly demonstrated that plants of these same varieties that have been kept free from mosaic troubles continue as productive and as promising as they ever were. The running out of potatoes has long been discussed, and many growers plan to "change their seed" every two or three years. Mosaic troubles in potatoes have been discovered, and all of the running out that attends the growing of this crop has been quite definitely traced to the influence of one or more diseases of the mosaic type. In plants which are propagated vegetatively, that is, by grafting or budding or by cuttings, etc., there does not seem to be any evidence to prove that the varieties will run out unless assisted in this process by disease or unless climatic or soil changes take place which render the variety no longer adapted to the conditions under which it is grown.

Propagation From Bearing Versus Nursery Trees

The suggestion has been made that nursery stock propagated from bearing trees will be more likely to be productive than will nursery stock which has been propagated from buds or scions cut from nursery stock. Apparently, there is little merit to this contention. A bud growing upon a young tree of a certain variety is no different from a similar bud growing on an old tree of the same variety. As a matter of fact, better propagating wood is frequently secured from young, vigorously growing nursery trees than could be secured from orchard trees; that is, the buds would be better developed, the scion wood would be stronger and a better stand of uniform trees would be secured as a result. A few nurseries have advertised the fact that their trees are propagated from buds or grafts taken directly from bearing trees. Outside of the fact that there would be less likelihood for mistakes in names to occur, there seems to be no advantage in such propagation. If varieties become mixed in the nursery row, continued propagation from such nursery trees will continue to spread the mixture.

Northern Versus Southern Grown Nursery Stock

Perhaps the most active arguments of all have arisen over the question as to adaptability of southern grown nursery trees in the North or northern grown nursery trees in the South. It has been commonly maintained by both fruit growers and nurserymen of the northern states that northern grown stock is better adapted to northern conditions because it is acclimated and will prove hardier. From the standpoint of hardiness and adaptability, this argument has no grounds upon which to stand. If a variety of apple which is hardy in the North is propagated by two nurserymen, one in the North and one in the South, both using the same stock and the same method of propagation and both delivering trees equally mature and equally well grown, there will be no difference in the behavior of these trees when planted under the northern conditions. This fact has been demon-

(*Continued on page 36*)

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Summary of Fruit Crop Prospects

By C. E. Durst

THE REPORTS of fruit prospects presented below were collected from leading authorities in most of the important fruit sections of the country. The conditions have changed little since last month. Cool weather has continued to hold back the buds in practically all sections except the West and Northwest. There was very little winter killing of buds on the whole, and neither has there been much damage from spring frosts this year. The season is getting somewhat late at this writing (April 15) for frost damage, but there are still possibilities of injury, particularly in northern fruit sections.

The date of each report is given in parenthesis and the name of the person furnishing the report is included at the close of each report.

Massachusetts (April 10).—Prospects are about the same as a month ago. All varieties of peaches are reported as having plenty of live buds for a full crop. Apples, our leading crop, promise well. There are prospects for a larger crop of most varieties than last year.

Small fruits have apparently come through with little or no injury. The season is from one to three weeks behind normal. There is still snow in the woods in western Massachusetts, and this keeps the temperature down. There has been little swelling of the buds as yet.—*F. C. Sears.*

New York (April 13).—The fruit prospects are about the same as they were a month ago. The buds are still practically dormant, since there have been few warm days. Frosts and unfavorable weather may still damage the crop, but prospects are favorable at this time.—*A. J. Heinicke.*

Pennsylvania (April 12).—Fruit crop prospects are unchanged in Pennsylvania. In southern and southeastern Pennsylvania the delayed dormant spray is about to be applied. In other parts of the state the buds have not even started to crack. There has been practically no winter killing of buds, and prospects for fruit are good all over the state.—*S. W. Fletcher.*

New Jersey (April 8).—There has been no winter injury of any consequence. Peach buds in southern New Jersey are not yet showing pink, and there is no danger of injury at present. Whenever a late season has been experienced in the past, we usually have had a heavy setting of fruit.—*M. A. Blake.*

Maryland (April 9).—Prospects for fruits are excellent. We have had no winter injury. Practically all apple and peach trees have plenty of fruit buds. Recent cold weather has checked bud development, and the chances are good now for escaping spring frost damage. Peach buds will soon be in the pink bud stage, while apples in many sections will not reach this stage for two or three weeks. We are now looking for a good crop of fruit.—*E. C. Auchter.*

Virginia (April 13).—The delayed dormant spray is still being applied in some valley and northern Virginia orchards. There are few aphids this year. Apples will be in bloom about April 21 in southern Virginia and about May 1 in northern Virginia. Prospects for apples are favorable at present.

Peaches are in full bloom in most sections, or ready to bloom. Some injury occurred about a week ago in southern Virginia to peaches on low land and in orchards of low vitality. We are in the midst of a cold wave, and it is impossible to say what damage, if any, will result.—*F. A. Motz.*

North Carolina (April 10).—A full crop of peaches is expected in the sand hill section where most of our commercial peach growing is concentrated. The trees have bloomed, and a good crop of fruit has set. The peaches are now shedding their shucks in some orchards.

Most of the commercial apple orchards are located in the western part of the state. The trees are just coming into bloom. The danger of damage is not yet over, but thus far the buds have escaped injury.—*C. D. Matthews.*

Georgia (April 10).—The freeze on March 14 found Elberta, Hiley, Georgia Belle and Hale peaches in full bloom in the Fort Valley section, and it destroyed about 25 per cent of the buds. The damage north of Macon was not so heavy. Early varieties were not so far advanced and suffered less. The Griffin section suffered practically no damage, as the trees were not in bloom.

Unless the April drop is heavier than is expected, the crop will be nearly as heavy as last year. Before March 14, prospects were good for a larger crop than last year. The Elberta crop will be less than that of last year. There will be a good crop of Hileys, Georgia Belles and Uneedas. Early Rose and other early varieties have suffered no appreciable injury.—*O. I. Snapp.*

Tennessee (April 8).—The two recent cold spells caused damage which varied considerably in different sections. Temperatures reached 24 degrees Fahrenheit in some places. The damage to peaches, which were in bloom in some places, ranged from 10 to 90 per cent. In the Kingston district, our leading peach section, about 30 per cent of the blossoms were killed, according to one of the best growers there. This, however, is insufficient to thin the crop properly.

Pears and plums were in full bloom when the freeze occurred and were seriously damaged, but some varieties which were not so far advanced will probably produce good crops. Apples were not sufficiently advanced to be damaged. In general, we have prospects for a very fair fruit crop in most sections.—*J. A. McClintock.*

Arkansas (April 12).—Apple prospects have changed very little. The recent storm probably did not kill more than 25 per cent of the buds, and this will not necessarily mean any reduction in crop. The Ben Davis crop will be somewhat more spotted than at first thought. We should have 75 to 80 per cent of a normal apple crop.

Some injury to peaches occurred at Fayetteville, but in the commercial sections practically no damage took place, which will mean practically a full crop for the state.

Some grape vineyards, especially those of early varieties, show a great deal of damage. The damage should not average over 25 per cent. In many vineyards, the new growth had not been shortened back, so that a full quota of buds may still be left. Sweet cherries and plums are largely killed, though there are still some left of both. The sour cherry crop has been reduced about one-third.—*J. R. Cooper.*

Kentucky (April 10).—Fruit prospects are unchanged. With few exceptions, the commercial peach orchards of the state promise to set a good crop. The blossom buds are not open yet, except in southwestern Kentucky, and probably will not be open for approximately a week. Apple buds are now in the so-called delayed dormant condition. Indications are that most varieties will bloom well.—*W. W. Magill.*

Missouri (April 10).—Prospects for fruits are very good. Weather conditions have been generally favorable. The peach crop is the only one which has been damaged. The buds were injured slightly early in the winter and to a small extent during the latter part of March and the first part of April. There are prospects, however, for a good peach crop in most sections of the state.—*T. J. Talbert.*

Illinois (April 13).—Prospects remain about the same as a month ago. Cold weather has held back the buds. There should be a good peach crop except in certain localities on low land and in orchards of low vitality. On account of the increased acreage of bearing trees, Illinois should have a big peach crop this year.

It is still a question as to how much effect the dry weather last summer had on apple bud formation, but at any rate, we should have a good crop on the trees which did not produce too heavily last year. The recent cold weather appears to have done no damage.—*M. J. Dorsey.*

Michigan (April 9).—Conditions are promising for a good fruit crop. Very little winter killing has occurred. Fruit buds are still practically as dormant as they were on the first of January. A late blooming season is therefore in prospect. Our fruit crop is never safe until after the middle of May, but prospects are quite favorable at this time.—*V. R. Gardner.*

Wisconsin (April 6).—Fruit prospects are still an unknown quantity. It is reported that cherry blossom buds suffered little winter injury.

Colorado (April 8).—Fruit prospects are excellent except in the case of apricots, the crop of which was reduced about 50 per cent by the recent cold spell. The apple outlook is very good. The winter has been mild, and the trees are in good condition for a large crop. The peach crop is also promising. If no frost damage occurs, we should have one of the heaviest crops we have had for years. The same is true of sour and sweet cherries. The season is a week to 10 days ahead of last year, and because of this the danger from spring frosts is greater. The recent cold spell, which lasted about two weeks, proved quite helpful in checking bud development.—*E. P. Sandsten.*

Idaho (April 12).—Weather conditions have continued to be favorable and prospects are good for a bumper fruit crop. Apricots, peaches and cherries are in full bloom in some sections, and blossoms have not been damaged by the cold thus far. Apples will not be in full bloom before the latter part of April. We have had a very mild winter and an early spring.—*C. C. Vincent.*

Washington (April 13).—Prospects for a fruit crop are good. The blooming period has been earlier than usual, but there has been little frost damage. It will be a month before reasonably accurate predictions can be made, but at the present time there are prospects for a fair crop of all fruits—about the same as last year.—*O. M. Morris.*

Oregon (April 14).—The prospects are good for an excellent crop of all kinds of fruits.—*W. S. Brown.*

California (April 12).—Fruit prospects for California are good. Favorable fruit setting conditions prevailed during the entire pruning season. Heavy rains fell throughout the state last week, but they did little damage to deciduous fruits. This rain did much good, especially in sections in which irrigation is not possible. The apricot crop will probably be short in some of the important producing localities.—*W. P. Tufts.*

UNDER the recent ruling of Secretary W. M. Jardine, it will be unlawful to ship from Porto Rico and Hawaii into or through any state or territory in the United States plants or plant materials on which soil or earth adheres to the roots of the plants. This ruling was made in connection with the federal quarantine and is intended to prevent the entrance of Japanese rose beetles and several species of other insects into the United States.

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"I wish to express my appreciation for the prompt service I always receive in delivery. This makes the fourth tire I have ordered from the Ward Co. and am greatly satisfied. I know by my own experience that the Riverside Tire can easily double its mileage guarantee and is serviceable on every kind of road.

"I always will say a good word for Montgomery Ward & Co."

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"I must write and tell you how pleased we are with your prompt shipments, good quality and low prices. We have been buying from Ward's for 35 years, and every time everything is just as represented. My married daughters are also customers of Ward's. Once a customer always a customer. With the quick service and savings from 10 to 40%, Ward's is the place to buy."

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"I am seventy-eight years old and have sent our orders to Montgomery Ward & Co. since you started your Grange Store in Chicago in 1873. For years you have saved me money and filled my orders perfectly.

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"Just a few words in regard to the quality of your goods and your low prices. I order almost all of the things we use including household furnishings, groceries, hardware, clothing and notions, and send for all of it to you practically; am very much pleased with the goods and service."

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Each year Montgomery Ward & Co. saves Millions of Dollars for the American people!

This big saving is possible because you and our eight million other customers together give us a *buying power* so vast, so tremendous!—that we are always able to secure for you lower-than-market prices.

Consider stoves, for example. Our customers always bought a great many stoves from us. But in the last four years our low prices *have actually doubled the number of our customers!* So that today we are able to contract for *all* the stoves a factory can make. Your average saving on a Ward stove is now at least $15.

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$60,000,000 in Cash Secures Low Prices for You

Have you ever stopped to consider that your Ward Catalogue brings you all the saving, all the price advantage that $60,000,000 in cash can secure for you?

That buying by the car load, by the train load, buying in every important market in the world—and paying cash, must secure for you absolutely the lowest possible prices! That there is no possible way you can secure a bigger opportunity for saving than by using regularly your copy of Ward's Catalogue!

And low prices at Ward's are made without sacrificing quality. We never cut the quality of a tire, a shoe, or a rug, to make the price seem lower. Ward Quality always is maintained. Ward's 54 year old guarantee is back of every article we sell: "Your money back if you want it."

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Think of Forty-Million spark plugs a year. Only such a vast production could build Champion superior quality at such low prices as 60 and 75 cents. The savings of our enormous output are enjoyed by two out of every three motorists the world over.

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CHAMPION
Dependable for Every Engine
Toledo, Ohio

Precooling of Fresh Fruits

By F. W. Allen
University of California

IN ITS life history, fruit passes through its period of growth, its ripening period and then that of decay. While each of these are rather distinct, yet it is impossible to determine exactly where one ends and the other begins. Fruit should be fully developed and the ripening processes begun before loading it into a refrigerator car. It must arrive on the eastern markets and be in the hands of the consumer before the period of breaking down or decay begins. Considering that the average refrigerator car is on the road 12 to 14 days between California and New York, and that the fruit is not consumed until one or two days later, the problem of how and when the fruit ripens in transit is of utmost importance to California growers and shippers. Should the more perishable fruits, such as cherries, plums, apricots and peaches, ripen in transit as rapidly as they do under natural conditions, they would arrive at their destination in very poor market condition—overripe, soft and moldy.

Refrigeration Checks Ripening

Since it has long been known that the metabolic processes of fruit are retarded when it is subjected to low temperatures, this principle has been made use of in transportation. About 35 years ago the first shipment of California fruit was sent to market in a car cooled with ice. Despite the predictions that it would never arrive in a condition fit to eat, the comparatively low temperature of the car checked the ripening processes sufficiently that the fruit arrived in fair marketable condition. The practicability of refrigeration in transit was thus established, and today some 50,000 improved refrigerator cars making several trips annually are required to transport California perishable fruits and vegetables to market. The temperature maintained in the best of refrigerator cars is, however, not exactly comparable to cold storage temperatures. The maturing of the fruit does not cease, but is only retarded, and in the case of berries and the more tender tree fruits, some difficulty is still experienced in shipping long distances. Considerable experimental work along these lines has been carried out by the United States Department of Agriculture, and the results show quite clearly that not only is a low temperature a controlling factor in delaying the ripening process, but very closely associated with this is the rate of cooling or the actual time required for the fruit in a crate or box to be thoroughly cooled after being placed under a low temperature.

Ripening Delayed by Low Temperature

Fruit picked and packed under a temperature of 80 to 90 degrees Fahrenheit, and loaded into a refrigerator car with a temperature of perhaps 40 degrees, may not become thoroughly cool for one or more days. Fruit in loose open crates cools more rapidly than in boxes, especially where each specimen is wrapped. A well packed box of apples or pears can remain under a temperature as low as 30 degrees for three or four days before the individual specimens in the center of the box reach this temperature. Accepting the figures of various investigators which show that fruit ripens three to four times as rapidly at 60 degrees Fahrenheit and twice as fast at 40 or 45 degrees than at 32 degrees, the value of cooling the fruit as quickly as possible after picking becomes apparent.

Precooling is the term now used where an effort is made to thoroughly chill the fruit previous to packing or loading into the car. Precooling after loading by blowing a blast of very cool air in one end of the car and drawing it out at the other, was a method used a number of years ago, but now largely discarded. As now generally practiced, the fruit is stacked rather loosely in a heavily piped cold storage room and allowed to remain at a temperature perhaps 10 degrees below freezing for from six to 24 hours, depending upon the fruit and its temperature when put in. The actual temperature of fruit is thus quickly lowered to a point where maturity is materially checked. The precooling of such fruits as berries has proven highly advantageous in that precooled fruit carries in much better condition and the marketing radius is thereby materially increased. Experiments and shipments of cherries, pears and other fruits, ripening during the summer months, show, where precooled within a few hours after harvesting, that the fruit will remain in good eating condition several days longer than where cooling is delayed several days.

Precooling Adds to Expense

Precooling, however, is an added item of expense to the fruit grower. The fruit must receive extra handling, and suitable refrigeration facilities are necessary. For small shipments an insulated room through which a fan blows cold air from melting ice and salt, may prove fairly satisfactory. For larger shipments, however, one or more rooms of a cold storage plant are most commonly used. Such rooms are provided with extra refrigeration in order that the heat from one or more carloads of fruit may be withdrawn in a relatively short time.

That precooling is highly desirable with the more perishable fruits is no longer a matter of doubt. It may also prove valuable in connection with shipping riper fruit to market. However, it is not to be looked upon as a general insurance policy against "red ink," and before making a heavy investment for precooling facilities, there should be some very good basis for believing that such a plant will more than pay interest on the investment.

Interesting Advertising Campaign

By F. C. Sears
Massachusetts Agricultural College

IN MANY parts of the United States and Canada during the last few years, there has been staged a very effective advertising campaign to promote an interest in eating apples and in their wholesomeness as an article of diet. The International Apple Shippers' Association has perhaps been the backbone of this enterprise, but many other organizations have co-operated in it—boards of trade and chambers of commerce, state departments of agriculture, state fruit growers' associations, the American Pomological Society, and the Canadian Dominion Department of Agriculture, besides innumerable smaller organizations.

The Apple Featured in Dining Cars

For the most part, the work has been carried on during National Apple Week, the last of October and first of November, and as might be expected, countless schemes have been adopted in the campaign. One of the most effective of these has been to induce all establishments which serve food to feature the apple during this week. Last autumn the dining cars had a small card fastened to the edge of the regular menu card and on this card were a number of "specials" for that meal and each one which carried apples in any form was printed in red ink—"Roast pork and apple sauce," "Apple pie," "Baked apple dumpling." Certainly, no one ate on any of these cars during that week without being forcibly reminded that apples were a good article of diet. And many hotels and restaurants featured apples in the same way.

Window Displays

Another very effective line was a campaign of window displays in towns and cities. This was staged by the local board of trade or chamber of commerce, though usually under the auspices of the state department of agriculture or the fruit growers' association, and consisted of a competition for ribbon prizes, with occasionally a loving cup as a sweepstakes. All sorts of stores competed, from jewelry stores to hardware stores, and some wonderfully effective displays were staged. The best type of such windows, from the standpoint of the apple interests, is the one which combines apples with the ordinary goods sold by that particular store—apples and shoes, apples and dry goods, apples and diamond rings—since a merchant can afford to let such a window stand for the whole week, while if he devoted the entire window to apples alone, he usually feels that one or two days is as long a period as he can afford to give up his own wares. In some states score cards were announced beforehand, giving the points on which awards for window displays would be based—so much for general attractiveness, so much for originality, quality of fruit, signs and posters, etc.

Canada Takes Important Part

In Canada, the fruit branch of the Dominion Department of Agriculture took charge of the campaign and sent a representative to all the principal cities to hold demonstrations on the food value of apples. An attractive cook-book for apples was distributed by the thousands, while the rotary clubs in most towns and cities heard a speaker on the subject some time during the week.

In the course of these campaigns, thousands of apples, perhaps millions, were distributed to school children, at theaters and to postoffice and telephone employees, while leading editorials and featured news matter were the order of the day. Had the space in store windows and that in newspapers, which was devoted to apples during this week, alone been paid for at regular rates, it would have cost the apple growers thousands if not millions of dollars; in fact, much of it could not have been had at any price.

Good Thing for Apple Growers

From the standpoint of apple growers, one of the most interesting features of the whole situation is the fact that we can get this interest and co-operation from such a wide variety of people in the sale of our product. So far as I have ever known, no other product has ever excited the interest and enthusiasm among so many different people as has the apple. Milk is a splendid article of food, ice cream is delicious, ham and eggs are delectable; but no dry goods store ever put in a show of eggs, and no jewelry store ever stages an exhibit of hams.

Let us apple growers accept all this with due thankfulness.

To Sell *is to* Serve

Idealism sometimes proves itself practical.

Graham Brothers Truck business was founded upon an ideal—

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Instead of merely building trucks for the "market," Graham Brothers analyzed the specific requirements of the many industries comprising the market—and supplied the exact type of truck best suited for each.

The ultimate result was the most complete line of standard chassis, cabs and bodies in the world.

Built on a chassis that has won innumerable laurels for endurance, including an award for passing "impassable" roads in Russia, these soundly constructed trucks have proved that they answer the great need of modern business.

That need is for a chassis and body —a truck complete—that can be bought on the moment and put into service without delay.

Whatever the business, whatever the peculiar requirements, Graham Brothers supply it—*and service it* —through Dodge Brothers Dealers all over the world.

Thus the perfection of an ideal has brought to merchants a new and valuable service—and has made Graham Brothers the largest exclusive truck manufacturers in the world!

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SOLD BY DODGE BROTHERS DEALERS EVERYWHERE

What becomes of the empty tobacco tins?

"Say it with empties," seems to be the sentiment of certain pipe-smokers

Of course, to most people an empty tobacco tin is just something to throw away. But there are exceptions.

Every so often some member of the Edgeworth Club writes in to tell of a novel use to which he puts his Edgeworth "empties."

A railroad fireman started a pile of Edgeworth tins on the American desert as a sort of shrine, he says. Passengers and employes, according to his story, caught the spirit and the pile grew fast.

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A telegraph operator says he uses Edgeworth tins as amplifiers for the Morse code that comes in over various wires.

Still another use is brought to light by Mr. L. C. Quinn of New York. He says:

New York City

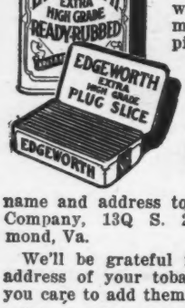
Larus & Bro. Co.
Richmond, Va.

Gentlemen:

As a member of the Edgeworth Club, I want to tell you of a little scheme I have to help the game along. When I take the last pipeful from the blue can, I always set it up in come conspicuous place where it may be seen by passengers on the subway or elevated platforms, or in an office window where passersby may have their attention mutely drawn to this very good smoking tobacco, which I have been using for eleven years. Maybe other members of the Club would like to follow suit when they have an opportunity.

Yours very truly,
L. C. Quinn.

If you do not already know, you may be curious to find out just what kind of tobacco is put into these blue tins that arouses such kindly sentiments in the hearts of pipe-smokers.



To those who have never tried Edgeworth we make this offer:

Let us send you free samples of Edgeworth so that you may put it to the pipe test. If you like the samples, you'll like Edgeworth wherever and whenever you buy it, for it never changes in quality.

Write your name and address to Larus & Brother Company, 13Q S. 21st Street, Richmond, Va.

We'll be grateful for the name and address of your tobacco dealer, too, if you care to add them.

Edgeworth is sold in various sizes to suit the needs and means of all purchasers. Both Edgeworth Plug Slice and Edgeworth Ready-Rubbed are in small, pocket-size packages, in handsome humidors holding a pound, and also in several handy in-between sizes.

To Retail Tobacco Merchants: If your jobber cannot supply you with Edgeworth, Larus & Brother Company will gladly send you prepaid by parcel post a one- or two-dozen carton of any size of Edgeworth Plug Slice or Edgeworth Ready-Rubbed for the same price you would pay the jobber.

[*On your radio—tune in on WRVA, Richmond, Va.—the Edgeworth station. Wave length 256 meters.*]

The Editor's Mail Box

Preparation of Self-Boiled Lime-Sulphur

AMERICAN FRUIT GROWER MAGAZINE: Will you kindly give me full directions for making self-boiled lime-sulphur?—W. P. G., Missouri.

ANSWER: For making self-boiled lime-sulphur mixture in 50-gallon lots, slack eight pounds of fresh stone lime in a barrel with hot water. Use sufficient water to prevent burning of the lime, but do not use so much that you will check active slacking. As soon as the slacking is well started, add eight pounds of sulphur. It is best to mix the sulphur in advance with water to make a thin paste. Stir the mixture constantly and add water as needed to prevent burning, but not so much that the slacking will stop. After about five minutes of slacking, add sufficient cool water to stop the slacking; then strain the mixture into the spray tank and add sufficient water to make 50 gallons.

Watch the mixture carefully during the slacking process and be sure to stop the slacking by adding cool water before red streaks appear. The red streaks indicate that some of the sulphur has gone into solution, and such a mixture will injure foliage.

Do not attempt to store self-boiled lime-sulphur. Some of the sulphur is certain to go into solution, and foliage injury would follow the use of such material. The mixture should be applied immediately after preparation. If arsenate of lead is used with it, this should be added after the mixture has been fully diluted.

Preparation of Dry Mix

AMERICAN FRUIT GROWER MAGAZINE: It is my understanding that dry mix lime-sulphur mixture is an improvement over self-boiled lime-sulphur for spraying peaches. Is this true? If so, kindly give me directions for making and using it.—J. W. S., Pennsylvania.

ANSWER: It is true that dry mix sulphur-lime mixture, or "dry mix," as many people call it, is generally believed to be superior to the old self-boiled lime-sulphur preparation. The dry mix has better sticking qualities than the self-boiled lime-sulphur, and it controls scab and brown rot satisfactorily. It is also easier to make and is less expensive.

Dry mix is made by mixing the following materials in the proportions named:

Finely powdered dusting sulphur	5 pounds
Hydrated lime	7 pounds
Calcium arsenate	½ pound

The material for a full season's needs may be prepared at one time, since the mixture will not deteriorate in storage if kept dry. It is extremely important to mix the materials thoroughly. Dust mixers are on the market that do this work effectively. Some growers have constructed home-made barrel mixers that are reported to do this work satisfactorily. Shovels and hoes are used by some growers.

The above mixture should be used at the rate of eight pounds to 50 gallons of water, or 32 pounds in a 200-gallon tank. It is advisable to work the mixture through a sieve having 14 or more meshes to the inch in order to remove lumps and thus prevent clogging of the spray nozzles.

Eradicating Weeds in Driveways and Walks

AMERICAN FRUIT GROWER MAGAZINE: The weeds grow up in my driveway every summer and make it look untidy. The driveway is made of cinders covered with crushed stone. The weeds grow through it. Possibly I did not use enough cinders and gravel. Can you tell me how to best handle the matter?—L. R. J., Wisconsin.

ANSWER: You can prevent the growing of weeds on your driveway by spraying it with arsenite of soda solution. Dissolve one to two pounds of the chemical in 10 gallons of water and sprinkle it over the driveway at the rate of one gallon per square yard. This solution will kill all vegetation and will remain in the soil for a considerable time. Usually one or two thorough treatments are sufficient to keep weeds out of a driveway, walk or tennis court throughout a season.

Poisoned Bait for Cut Worms

AMERICAN FRUIT GROWER MAGAZINE: Last year cut worms did a great deal of damage to my small fruit plants and vegetables. What is the best way to control them?—W. A. R., New York.

ANSWER: The best way to control cut worms is to use poison bait. You can either broadcast it in the field or spread it about the base of each plant. The following materials are sufficient for treating five acres:

Bran	20	pounds
Paris green	1	pound
Cheap syrup	2	quarts
Three lemons.		
Water	3½	gallons

The bran and Paris green should first be mixed dry. The juice of the lemons should be squeezed into the water, and the pulp and peel should be chopped into fine bits and added to the water. Next, dissolve the syrup in the water and fruit mixture. Finally add the liquid to the bran and mix thoroughly in order to dampen it throughout.

The bait should be applied in the evening, for the cut worms operate during the night, and the bait will be in fresher condition if applied in the evening than if applied earlier in the day.

Blister Beetles on Potatoes and Tomatoes

AMERICAN FRUIT GROWER MAGAZINE: Please tell me how to control blister beetles on tomatoes and potatoes.—K. J. T., Arkansas.

ANSWER: The experiment station of your own state has done some important work along this line recently. Dr. W. J. Baerg, Entomologist at the College of Agriculture, found that blister beetles can be controlled very satisfactorily with a mixture of equal parts of sodium fluosilicate and hydrated lime. The material was applied by means of a small hand duster. In his tests, the material was applied in the afternoon when there was considerable breeze and the foliage was quite dry, so that little of it remained on the foliage.

Notwithstanding the unfavorable conditions, the ground was found strewn with dead beetles the next day; not a living beetle was found. The theory is that the material irritates the legs of the insects and that in response to this they draw their legs through their mouth parts. In this way the material gains entrance to the stomach and kills the beetles. In the past, it has been very difficult to control the beetles for the reason that they apparently eat very little, if anything. If the new treatment proves as effective in practice as was found in the experiments, it will be of real value. Further details can be obtained from Station Bulletin 201 of the Agricultural Experiment Station, Fayetteville, Ark.

More About Propagating Lilacs

AMERICAN FRUIT GROWER MAGAZINE: I note the question in the Editor's Mail Box department in your March issue in which a reader wants to know of stocks to use for lilacs to prevent them from suckering. I have given considerable attention to this problem, and I would like to add the following comments to what you have said.

The Syringa Vulgaris or common lilacs, of which all fancy strains are

More Power *when you Spray!*

When you spray—spray right! A heavy, coarse spray will not stick. It drops, and is wasted. What you need is a fine, misty fog that covers top and bottom of leaf with a liberal coat of insect poison.

And that requires power—engine power. Power that will generate the great pressure necessary and maintain that pressure constantly.

Hercules engines supply this consistent power. They generate the pressure that assures quick, economical and complete spray coverage.

Leading sprayer manufacturers equip their products with Hercules engines, which fact in itself is proof of Hercules supremacy. Correct design, Wico magneto, indestructible malleable iron cam gears, hard bearings, .45 carbon steel crankshaft and connecting rods, interchangeable repair parts and many other features insure dependability and long life.

Be sure the Spray equipment you buy is Hercules-powered. Write us and we will gladly refer you to manufacturers who use Hercules engines in their sprayers.

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You install the track on the inside, curving a section for the corner, and hang the doors so they will roll around on the inside corner of the building. A simple and practical method—and you can depend on the doors rolling smoothly, easily, and always closing perfectly. No door troubles in winter from snow and ice. Hangers can't come off the track. This hanger also adapts itself to folding hinged doors. Doors can be made any size to fill opening. Easy to install. Adjustable to and from the building and up and down.

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simply a slight variation, sucker very badly and it is useless to try any of these. The only lilacs which do not sucker are the *Syringa Pekinensis* (Chinese tree lilac) and the *Syringa Japonica* (Japanese tree lilac). Neither of these are real lilacs, but make splendid stocks for the various strains of the Vulgaris family. The only trouble is the high price of such seedlings.

I use one-year-old ash seedlings, either of the white or green ash, and bench graft above the collar, so the union will be above ground after the grafts are planted in the nursery row. The grafting is done the same as in making apple grafts, with the addition of waxing the union after it is wrapped. The ash roots are cut back to about five inches below the collar. The grafts are calloused in the cellar packed in damp sand.

If the grafting is done by three people, one making the grafts, one wrapping and one waxing, the grafts will make fully as good a stand in the nursery as apple grafts. But if the work is done by one person, the cambium of the ash root will have time to turn partly brown before the wax covering is put on, and they will fail to callous and make a union with the lilac scion. Lilacs propagated in this way will never sucker, and all will be easy to trim to tree form and such trees will develop a much larger size than would be possible to obtain on any variety of lilac stocks. — *M. L. Gjestrum, Michigan.*

Summer Pruning of Grapes

AMERICAN FRUIT GROWER MAGAZINE: Is summer pruning of grapevines a good thing? If so, please tell me how it should be done.—R. E. L., Arkansas.

ANSWER: The summer pruning of grapes is a doubtful practice. Some people believe that the removal of some of the leaves exposes fruit to the sun and promotes better ripening, but it must be remembered that the leaves are the centers of food manufacture and that their action is needed to furnish materials for proper finishing of the fruits. It is, therefore, unwise practice to remove leaves. If the leaves become too heavy, it is an indication that more buds should have been left during the winter pruning.

A Correction

IN GIVING directions for treating seed potatoes for scab in the April issue of this department, it was stated that four pounds of corrosive sublimate should be used for 30 gallons of water. That amount would control the scab all right, but it would kill the potatoes as well. Four *ounces* of corrosive sublimate should be used for 30 gallons of water and not four *pounds*. We thank John M. Owens of Weedsport, N. Y., for calling our attention to this matter.

Scatter the Bee Colonies

IN USING bees in orchards for pollination purposes, it is advisable to scatter the colonies as uniformly through the orchard as possible. Under favorable conditions the bees will travel a considerable distance to secure nectar. However, in bad weather, the bees do not venture more than 100 to 150 yards from the hive. An apiary placed on one side of the orchard will therefore not furnish as good a distribution as single hives scattered throughout the orchard.

The best way, according to the New Jersey College of Agriculture, is to distribute the bees so that the hives will be located not further than 210 feet from each other each way. This spacing will furnish approximately one hive of bees to the acre. In view of the average strength of beehives at this time of year, a smaller number than one hive to the acre would probably be insufficient in many cases. A hive of bees at blooming time should contain about three quarts of bees, numbering about 15,000 individuals.

He who laughs last
Generally is a nit-wit.

58 Miles an Hour—
5 to 25 Miles in 8 Seconds—
25 Miles to the Gallon—
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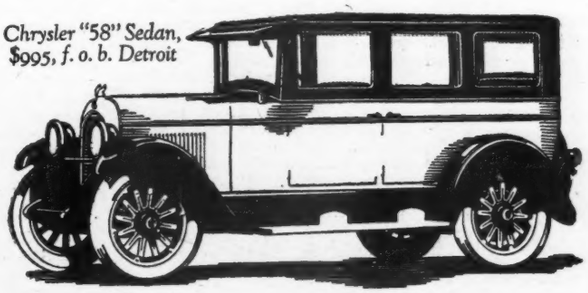

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ORCHARDS which are properly cultivated and trained and in which insects and diseases are controlled by spraying may be further benefited by the use of commercial fertilizers, according to the New York Agricultural Experiment Station at Geneva.

In long continued experiments, it has been found by the station that sodium nitrate or cottonseed meal as sources of nitrogen, and of acid phosphate and potash increase the wood growth and the yield and quality of the fruit. While the nitrogenous fertilizers gave the largest increases, the best results were secured when acid phosphate and potash were used in connection.

The station recommends that whether or not a cover crop is grown, it is advisable to apply a total of 250 to 300 pounds of nitrate of soda per acre in two lots. The first application should be made soon after the leaves unfold, and the second should be made two to three weeks later. The nitrate should be broadcast and harrowed in lightly.

Orchards which are failing in productivity may be restored by proper drainage of the land, control of insects and diseases, the adoption of approved cultural practices, and finally by the application of commercial fertilizers.

THE WENATCHEE District Co-operative Association held its annual meeting at Wenatchee, Wash., on March 16. Practically all of the former trustees were re-elected. The present board is composed of E. E. Tigner, W. O. Marr, U. G. Pogue, Stanley Goldy, J. H. Auvil, James Erickson, J. F. Reister and William Kaysen. The following officers were elected: J. H. Auvil, President; E. M. Gillett, Vice-President; and M. M. Rumohr, Secretary.

Reports of the officers and department managers showed that 5600 cars of products have been shipped since the organization began operations in 1922. A total of 1151 cars of apples and soft fruits was marketed during the present season to the time of the annual meeting. Sales were made in 40 states, exclusive of the District of Columbia, and in eight foreign countries. Products were sold in 201 cities in the United States and in 16 cities abroad.

Since the organization started operations in 1922, 2292 cars were diverted of the 5600 cars shipped. During 1922, 675 claims were filed which realized $67,098.24 for the association. In 1923 a total of $10,238.73 was collected from 428 claims filed. A total of 273 claims was filed in 1924 from which the association collected $40,527.11. During the present shipping season 247 claims were settled at the time of the annual meeting for the sum of $10.465. Since 1922, the association has collected $128,329.08 from claims.

General Manager White, among other things, reviewed the advertising policies of the association. He recommended that the association join the northwestern movement for the advertising of northwestern apples to the consumer, supplementing this work by a certain amount of Jim Hill brand advertising by the association direct. He also recommended the promotion of market development service under the direction of the sales department. He stated furthermore that 83 members had been added to the membership role between January 1 and March 16. These growers control about 170 cars. It is estimated that the association now controls a total of about 1540 cars of the crop for the coming season.

"A NEW field for agriculture college work has developed because of the rapid spread of co-operation. Every college should now have short and long courses for training managers of co-operative organizations. Co-operative management is a business peculiar to itself. It requires special tact and judgment, as well as a different system of bookkeeping and accounting. Even the methods of operation on market exchanges are different. The college must occupy this field or be open to a just criticism.

"Agricultural colleges should never allow a student to finish his course without a thorough knowledge of the principles of co-operation. College students become leaders. Leaders should know, not guess." — *C. W. Pugsley, President, South Dakota State College.*

THE YAKIMA Fruit Growers' Association is offering a limited number of its seven per cent first refunding gold bonds to its members and to the general public. These bonds have been issued for the purpose of covering expenditures which will be made on capital improvements this spring. The bonds are dated June 1, 1924, and mature in 15 years. They are issued in denominations of $1000, $500 and $100 and they bear seven per cent interest payable semi-annually in June and December. The bonds are being offered at par, plus accrued interest from December 1, 1925, to date of sale.

THE FLORIDA Citrus Exchange is furthering a movement to organize an association for advertising Florida citrus fruits. The proposal was presented by C. C. Commander, representing the exchange, at the March meeting of the Fruitman's Club of Florida.

Under the proposed plan, an organization is to be formed for the sole purpose of financing and promoting a publicity and advertising campaign for increased use of Florida fruits. Membership is to be open to all citrus shippers of the state. The organization is to be financed by a fixed charge per box, which may vary from year to year. The voting power is to be arranged on a per box basis. A subsidiary is to be formed for the purpose of developing European markets. The organization is not to interfere in any way with the shipping or selling plans of individuals or other organizations; its activities will be limited to the field of publicity. It was proposed by Mr. Commander that a committee of seven members of the Fruitman's Club be appointed to study the plan and submit recommendations at the next meeting.

STEADY growth for the past year is reported by the Ohio Fruit Growers' Co-operative Association, Columbus. An increased demand is noted for the "Buckeye Brand" of fruit handled by the association. Sales early in the season brought returns to growers which seemed satisfactory. Because of the better prices realized for the Buckeye Brand, other growers are taking an interest in the work of the association.

This organization is composed of eight units, seven apple associations and one peach association, federated to make up the state organization. It was organized in 1922 and the stockholders number about 100. The total volume of apples handled the past year was 100,000 bushels, while peach shipments amounted to 50,000 bushels.

Figures showing the volume and amount of business for the three years are as follows:

Year	Cars shipped	Value of sales
1923	400	$200,000
1924	200	175,000
1925	300	250,000

FIVE HUNDRED carloads of apples of the 1925 crop were marketed by the Martinsburg Fruit Exchange, Martinsburg, W. Va., for its 70 members. A considerable portion of this output was exported. The exchange celebrated the close of the season with a banquet on the evening of March 11. Representatives of the federal government and of the West Virginia state government participated in the program which was largely of an educational nature.

This exchange is one of the oldest of the fruit marketing organizations of the Virginia apple producing section, having been formed in the fall of 1915 along lines suggested by the United States Department of Agriculture. It is a non-capital-stock, membership organization. Necessary capital has been provided through a membership fee of $5 and members' notes of $35 or more, according to orchard acreage. Fruit growers, in becoming members, agree to market an estimated amount of fruit through the organization, and agree, if they fail to do this, to pay

liquidated damages of 25 cents per barrel. A selling charge of five per cent is made on fruit marketed, and at the close of the season such portion of this charge as is not used in meeting expenses is returned to the growers as a patronage dividend.

The exchange owns a warehouse at Martinsburg from which the fruit shipments are made.

THE FOLLOWING figures show more eloquently than a volume of words would show the steady progress which the California Fruit Growers' Exchange has made and of the position which this organization holds in the marketing of citrus fruits:

Percentage of California Citrus Shipments Marketed by California Fruit Growers' Exchange.

Season.	Total carlot shipments.	Per cent.
1895–96	7,771	32
1896–97	7,778	23
1897–98	16,100	25
1898–99	10,714	28
1899–00	18,300	33
1900–01	24,504	45
1901–02	19,754	37
1902–03	21,380	45
1903–04	29,709	44
1904–05	31,616	45
1905–06	27,528	46.8
1906–07	29,826	54.4
1907–08	31,886	55.3
1908–09	28,071	60.3
1909–10	33,534	58.5
1910–11	46,081	61.0
1911–12	39,726	59.5
1912–13	20,248	61.3
1913–14	45,564	61.9
1914–15	47,647	62.6
1915–16	44,658	67.0
1916–17	53,830	67.3
1917–18	25,298	76.0
1918–19	45,876	72.2
1919–20	46,757	73.7
1920–21	60,116	72.5
1921–22	39,499	68.7
1922–23	59,707	75.8
1923–24	60,732	72.9
1924–25	49,437	75.4

"CO-OPERATIVE marketing has its foundations in religion and ethics, as well as in economics and business. In one of its aspects it exemplifies the truest spirit of human brotherhood, therein it is religious; in another aspect, it is righteousness and justice in the market place, therein it is ethical; in still another, it is efficiency and economy, and therein typifies the best in business practice."—*Walton Peteet.*

Controlling Fruit Flies in Cherry Orchards

IN THE northeastern area of this country fruits such as the blueberry, apple and cherry are subject to attack by various species of fruit flies. During years when the insects are abundant, growers sustain important losses, as infested fruits are unfit either for canning or for immediate consumption. Investigations of the species that attack cherries have shown that in plantings where the infestation was as high as 147,000 flies per acre prior to treatment, it was possible, through timely and thorough applications of arsenical sprays, to secure control of the insects which was not far short of extermination. Heavy applications of dust mixtures seemed to be equally effective, and the proof of the susceptibility of the insects constitutes an important contribution relative to the value of this method of treatment. It appears that some results of these studies may prove of value in combating the species attacking blueberries and apples.

With respect to the work with the cherry fruit flies, observations of orchard practices and the experimental data to date appear to warrant the following conclusions:

Spraying with lime-sulphur or Bordeaux mixture containing lead arsenate is the most economical and efficient method of combating the cherry fruit fly. The first treatment should be made when the flies first appear, and a second application given in about a week or 10 days. Two applications are ordinarily sufficient, but if infestation of flies is unusually high, a third treatment one week after the second treatment may be desirable as an added or extreme precautionary measure.

Heavy applications of sulphur-lead-arsenate dust (90-10 formula) appear to be as efficient as spraying. Owing to inferior powers of adherence as compared with the spray mixtures, it is suggested as a matter of caution to shorten the period between applications and increase the number of treatments whenever heavy rains are of frequent occurrence.

Systematic treatment of cherry orchards effects a marked reduction in losses by other insects than the maggot, as well as plant diseases. The benefits in this regard, especially in the case of brown rot, are almost if not quite as important during some seasons as the control of the maggot, since the sprayed fruits usually suffer less from brown rot and on delivery at the factory "stand up" better and as a rule display a more attractive appearance.

Supplementary control measures which may prove of considerable value in protecting individual plantings are early picking of the fruit and the collection of all crop remnants. Likewise in the case of neglected plantings, early harvesting of the cherries or destruction of the trees if they are of no importance may simplify the problem of protecting adjacent commercial orchards. Besides the beneficial effects upon the growth of the trees, frequent shallow cultivation from the time the cherries begin to color and continuing until mid-summer effects an appreciable reduction of the hibernating insects by bringing them to the surface of the ground where they are destroyed by various predaceous insects. —*Abstract of address by Dr. P. J. Parrott, New York Agricultural Experiment Station, before National Canners' Association.*

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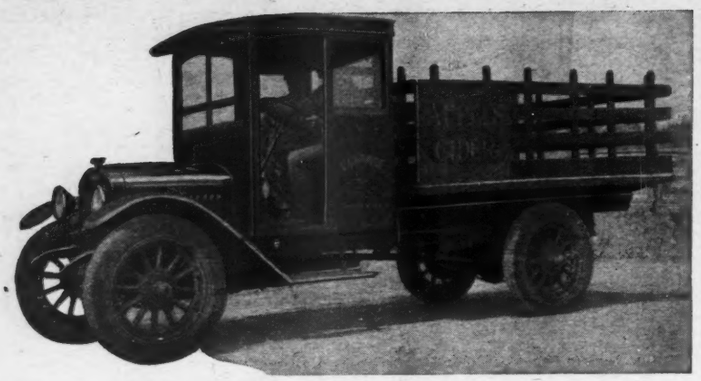

Endurance Measures Truck Profits

Mr. L. C. Harger, Farmington, Mich. purchased a GMC Truck with a stake body around Labor Day last year. With it he cleaned up $3000 profit, paying for the truck, out of the profits it earned, in three weeks time.

The great endurance and consequent long life of GMC Trucks is the result of General Motors engineering and manufacturing genius. *More than 71% of all General Motors vehicles ever built are still in active service.*

Time and again, after years of hard service, a GMC Truck is found hundreds of miles from its original job starting over again in the hands of a new owner. There are GMC's 10 years old, and more, still doing hard work day after day. Many of them are in the service of their original owners.

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THE FRUITS and vegetables of the Okanogan Valley of British Columbia brought a revenue of $6,000,000 to the valley in 1925. The apple crop totaled 2,300,000 boxes and brought in $3,000,000, or 50 per cent of the return. Cherries, peaches, plums and apricots also brought in considerable sums of money.

The fruit crop was sold largely in the prairie provinces. Over 1200 tons of fruits and vegetables were shipped to New Zealand. New Zealand formerly secured most of its fruits and vegetables from California but purchased its needs in Canada during the past year because of the embargo on products from California on account of the foot and mouth disease.

Co-operative marketing in the Okanogan Valley promises to greatly stimulate the fruit industry. The Associated Growers of British Columbia has been in operation but two years, but during that time improvements in handling and marketing the products have been made which have brought the growers the highest returns in history the past year. Every province in Canada is practicing co-operative marketing, and nearly every commodity grown in Canada or purchased by the farmers is bought or sold co-operatively.

The fruit industry of the Okanogan Valley has developed entirely within the last 30 years.

A REVISION has been made by the Department of Agriculture in the specifications for strawberry grades. The new order, which was announced on April 10, supersedes that issued on March 25, 1926.

Under the new standards the "No. 1" grade will consist of "strawberries of one variety with the cap (Calyx) attached, which are firm, not overripe, underripe, or undeveloped; and which are free from mold or decay and from damage caused by dirt, moisture, foreign matter, disease, insects or mechanical or other means. Unless otherwise specified, the minimum size shall not be less than three-quarters of an inch in diameter."

A WHOLESALE walnut dealer in California recently found it expensive to expose for sale walnuts of inferior quality in a second-hand sack of the California Walnut Growers' Association. The stand owner who displayed the walnuts for sale was able to point out the name of the party from whom he purchased the nuts. This party in turn furnished a bill of sale showing the identity of the original packer. The dealer was arrested on the charge of selling walnuts in a mislabeled package and for selling walnuts that were over 20 per cent seriously defected. He pleaded guilty to both charges and was fined $50 on each account in addition to a 50-day jail sentence. The jail sentence was suspended.

A STUDY of the demand for apples, particularly of New England apples, is being made by Prof. L. P. Jefferson of the Massachusetts Agricultural College. Information is being secured from consumers, retailers, wholesalers and exporters as to quantities, sizes, grades and varieties preferred by the various branches of trade. This investigation is intended to supplement the study of the apple industry of Massachusetts made during 1925. The New England Research Council and the Massachusetts State Department of Agriculture are co-operating in gathering data for this study.

MANY growers feel that it does not pay to go to a lot of trouble in grading apples and in facing the packages so that they present a good appearance when they reach the market. Such growers apparently feel that the identity of the fruit is lost when the fruit reaches the general market and that appearances play a small part, if any, in the prices paid for such fruit.

C. A. Bingham, who owns a large orchard near Cleveland, believes differently. During the season of 1924-25 he sold a car of apples in the Cleveland auction. Due to an error on the part of the packing crew, these apples had not been faced. They were graded stock, but the apples were simply poured into the baskets, following which the covers were placed. The variety was Jonathan. This car of apples brought $1.30 per bushel.

Dr. Bingham had several cars more of Jonathans in storage. He felt that a satisfactory price had not been secured for the first car, and he took precautions to insure that no errors were made in facing the remaining fruit. The apples were graded on the same basis as before, but the baskets were carefully faced. It is estimated that the facing cost 10 cents per basket extra. The remaining cars of apples that were thus faced brought an average of $2.20 per bushel. All the apples were sold on the same auction market and the same general marketing conditions prevailed. Dr. Bingham feels that the better price received for the faced apples was due entirely to the difference in appearance of the apples. It is needless to say that Dr. Bingham believes thoroughly in the facing of apples.

A RECENT report of the Department of Commerce shows that much larger quantities of dried, evaporated and canned fruits, on the whole, were exported during February, 1926, than during the same month in 1925. A similar state of affairs was true for the eight months ending February 28, 1926, as compared with the eight months ending February 28, 1925. The detailed figures are as follows:

	Month of February		Eight Months Ended February	
	1925	1926	1925	1926
	Pounds		Pounds	
Total dried and evaporated fruits.	15,170,837	23,393,282	263,633,297	288,390,462
Total canned fruits	11,033,271	13,880,585	175,689,532	245,160,458
Raisins	3,910,390	10,551,857	69,672,603	113,062,716
Apples, dried	1,204,803	1,469,360	17,217,588	22,041,049
Apricots, dried	681,661	329,985	11,450,629	17,442,514
Peaches, dried	330,406	140,843	3,479,970	3,027,484
Prunes, dried	8,218,572	10,231,560	152,279,518	122,995,682
Apricots, canned	2,376,271	1,189,039	27,924,497	27,261,637
Peaches, canned	4,211,935	3,915,811	48,043,156	78,794,260
Pears, canned	1,955,639	4,282,986	51,235,764	71,409,643
Pineapples, canned	1,299,596	1,765,113	21,078,867	31,839,922

THE RETAIL problem has been discussed several times in these columns. Of interest in this connection is an analysis of the subject made at a recent convention of the Interstate Merchants 'Council in Chicago by Edward M. Skinner, Vice-President of Wilson Brothers. Mr. Skinner's analysis apparently has reference to retail stores in general and not to retail food stores only.

Mr. Skinner stated that for every 22 families in the United States there is one retail store. Out of every 20 adults in the land, one makes a living in the retail business. For every three farmers there is one retail clerk or manager to help make the sales. For every four workmen in factories, there is one retail employee or manager waiting to render service.

Mr. Skinner believes that there are too many retail establishments in the country for the best good of all. About 75 per cent of the retailers fail. He believes that this high percentage of failure indicates that many retailers are incompetent. The mail order business, the house to house canvassing, and the development of chain stores have made it increasingly difficult for retail establishments to succeed.

THERE has been considerable agitation for several years about water transportation of Florida citrus fruits. C. C. Commander, General Manager of the Florida Citrus Exchange, has investigated the proposition recently and has made some interesting statements on the subject. Many factors must be considered, according to Mr. Commander.

The Clyde line has been transporting fruit from Jacksonville to New York at 23 cents per box lower than the same can be transported from Tampa. However, Jacksonville is at considerable distance from the main citrus districts and the problem of transporting the fruit from the fruit sections to Jacksonville is no small one, not to speak of the expense involved.

The best price offered for transporting a box of fruit from Tampa to New York is 35 cents for the carrying charge alone. The charge for shipment from the Tampa docks to the New York docks is 70 cents per box. In addition, all of the carrier lines want a guaranteed volume. Besides the above charges, there would also be a charge for transporting the fruit from the groves to Tampa by truck or rail, amounting conservatively to 35 cents a box. There would also be charges for loading and unloading. The question of refrigerated warehouses should not be overlooked. Warehousing at the receiving point must be provided for, in order to prevent temporary surpluses from demoralizing the market. During the winter, heated piers are necessary in order to prevent freezing of the fruit. At the present time such facilities exist only at New York and in a small way at Philadelphia. Demurrage charges often pile up while a boat is waiting to unload at these limited facilities.

Finally, it must be considered that the coast markets consume only a portion of the citrus fruits, not over 25 per cent. It would be impractical to reship fruit from the coast ports by rail, in Mr. Commander's opinion. Considering these various factors, Mr. Commander feels that water transportation should be viewed with conservatism at the present time.

FRUIT growers of Hood River, Ore., and White Salmon, Wash., are promoting the manufacture and distribution of a fruit-vending machine invented by Michael Redlinger, a Portland mechanic, which displays under glass two varieties of apples and delivers one or two upon insertion of a nickel or a dime. Its operation is expected to greatly increase the consumption of ap-

ples, and if successful in Portland, where it is being tried, it will be generally distributed elsewhere, on the street, at public buildings, in schoolhouses and in factories.

The machine's appeal, of course, is both to the eye and to the pocketbook, for who would not spend a nickel or a dime for a big, juicy Spitzenburg displayed in a slot machine? Thus thousands are expected to eat more apples, just as thousands were induced to eat more California raisins, when the appetite is on. Other thousands, the promoters hope, will acquire the apple eating habit, and as the result of eating them in the lobby of the office building or at the shop they will order them by the box for home consumption.—*G. N. Angell.*

THE FOLLOWING wholesale prices for apples of leading varieties grown in New York were collected in marketing studies made by Dr. G. F. Warren, Economist of Cornell University. The figures were presented at the annual meeting of the New York State Horticultural Society held at Rochester in February.

McIntosh	$1.32
Jonathan	1.28
Fameuse	1.13
Northern Spy	1.12
Rhode Island Greening	1.06
York Imperial	1.05
Alexander	1.04
Wealthy	1.04
Spitzenburg	1.02
Tompkins King	1.00
Baldwin	.98
Fall Pippin	.98
Twenty Ounce	.97
Gravenstein	.97
Duchess	.97
Maiden Blush	.91
Hubbardston	.84
Pound Sweet	.84
Roxbury Russett	.84
Ben Davis	.78

Missouri and Arkansas Expect Big Strawberry Crop

By Paul J. Pirmann

PROVIDING weather conditions prove favorable, 4000 cars of strawberries will be shipped out of the Ozark region of southwest Missouri, northwest Arkansas and northeast Oklahoma during the 1926 season, according to prominent horticulturists of this section. If prices are on a par with last year, Ozark berry growers will realize approximately $8,000,000 on this year's crop, it was stated.

Strawberries will begin to bloom during the latter part of April, and the season is expected to open in northwest Arkansas about May 5. The harvesting season probably will open in southwest Missouri this year about May 15 or 20.

About 120,000 pickers will be needed to harvest the 1926 berry crop of the Ozarks. At Sarcoxie, Mo., the strawberry center of the Ozarks, an army of approximately 12,000 pickers will be needed to harvest the large crop in that vicinity.

Although thousands of pickers will be "home talent," many other thousands will be immigrants who each spring form caravans to this section to aid in the harvesting of the giant strawberry crop.

Strawberry associations affiliated with the Ozark Fruit Growers' Association have agreed upon a standard price of three cents per quart to the berry picker this year. At that price a picker can make a good daily wage. It is estimated that approximately $1,215,000 will be paid Ozark berry pickers to harvest the 1926 berry crop.

Ozark-grown strawberries each spring are distributed to hundreds of markets in all sections of the country, and this spring some 40,500,000 quarts of the delicious fruit will be sent out from this section to satisfy the appetites of thousands of "short-cake" lovers of the country.

With the crop much larger this year than in 1925, extensive preparations have been made by the Frisco, Kansas City Southern and Missouri Pacific Railroads for the handling of the berries.

The Frisco each year handles a large portion of the berry shipments from the Ozarks on its famous "Strawberry Specials," and is expecting a movement of between 2300 and 2500 cars of strawberries this season. Frisco horticulturists are just finishing the work of checking up the 1926 berry estimate. Sarcoxie, the Frisco's greatest berry shipping point, sent out 283 cars of berries last year and is expecting a movement of 400 cars this spring. Monett was the second largest berry shipping point on the Frisco last year, with 180 cars, while Springdale, Ark., moved 121 cars and Farmington, Ark., 96 cars. Each of those points is expecting a large increase this year.

The Kansas City Southern Railroad is expecting a movement of close to 1000 cars of berries this year. Anderson, Mo., on that railroad, is pushing Sarcoxie for the Berry Capital title of the Ozarks. That point shipped over 200 cars last year and is expecting a movement of 300 cars this spring.

Other large berry shipping points on the Kansas City Southern are Neosho, Goodman, Noel, McElhaney, Pineville, Tipton, Ford, Sulphur City, Gravette, Decatur, Gentry, Siloam Spring, Westville, Sallisaw, Horatio and DeQueen.

A careful estimate of the prospective strawberry crop for 1926 of Neosho and Tipton Ford, Mo., both in Newton county and on the Kansas City Southern Railroad, indicates that provided no drastic changes in the weather occur, those two stations will alone ship 225 carloads of 94,500 crates of berries. This crop comes from 1200 acres near Neosho. There are also large acreages of berries at other points in Newton county.

At Noel, Mo., close to 275 acres of new strawberries are being sent out this year. In 1927 the growers in that vicinity expect to pick from 500 acres. This year's crop at Noel will come from 200 acres.

The Kansas City Southern has issued its Ozark strawberry estimate for 1926 as follows:

Joplin, Mo., 15 cars; Tipton Ford, Mo., 25 cars; Neosho, Mo., 200 cars; Goodman, Mo., 50 cars; Anderson, Mo., 300 cars; Lanagan, Mo., 15 cars; Noel, Mo., 30 cars; Gravette, Ark., 10 cars; Decatur, Ark., 75 cars; Siloam Springs, Ark., 60 cars; and Horatio, Ark., 50 cars.

The Missouri Pacific Railroad is expecting strawberry shipments totaling close to 500 cars this year, according to word received from horticulturists of that railroad. Among the large Missouri Pacific berry shipping points are Carthage, Galena, Stotts City, Crane and LaRussel, Mo., and Judsonia, Ark.

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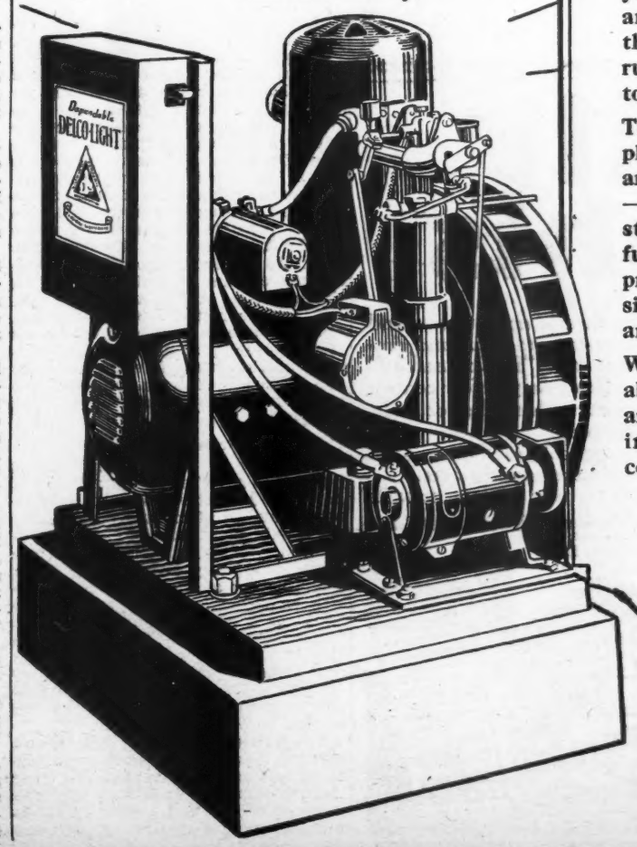
Automatically



HERE is the new automatic Delco-Light. It is backed by ten years of experience on the part of the pioneers and leaders in the farm electric field. It represents years of research and experiment and test. And now it is ready—the Delco-Light that starts itself, runs itself, stops itself, at the touch of a button.

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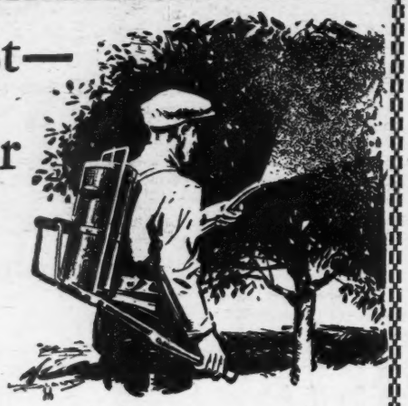
Crop



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is easy to use—just dust it on the trees. The dust on striking the air gives off hydrocyanic acid gas which penetrates the infested foliage and does the killing.

If your dealer cannot supply you, send for the following special spot dusting outfit:

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Both for $17.50, express collect
Saving you $1.50

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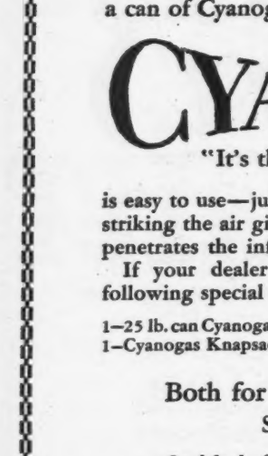

kill
Aphis

You don't have to grow so many dwarfs and culls — and you won't — if you protect your fruits from aphis and similar destructive insects by spraying with "Black Leaf 40" the Old Reliable nicotine spray. Costs only a few cents a tree. Use it singly or in combination with sprays for scale, codling moth and like pests.

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Ask your Dealer for new leaflets, or write

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Black Leaf 40
40% Nicotine

Ancient Practice Revived by Fig Growers

(*Continued from page 5*)

Then, too, picking and cultural costs during the intense heat of the summer season are considerably higher than that at other times of the year.

Experiments Tried

It is not peculiar, therefore, that the fig growers of the Coachella Valley should have been interested in possible ways and means of encouraging the production of a large first crop, even though such measures might perhaps be so laborious and costly as to be economically impracticable in other fig producing sections. With many trees returning $10 to $15 from a relatively small first crop as compared to not more than half that amount realized from crops four or five times as large in other parts of the state, it is readily apparent that if some method could be found which would materially increase the size of the first crop, even though relatively costly, it would certainly pay handsome returns. And furthermore, since with the Coachella Valley growers the second crop usually pays little or no profit—in fact, it is sometimes not worth harvesting—such a method might be profitable even though it resulted in greatly reducing the amount of second crop fruit. Such a procedure might be beneficial in making possible the production of a larger and better fall crop, which, as previously mentioned, is also quite profitable, as a rule. Some such line of reasoning as this is doubtless responsible for the efforts made by the fig growers of the Coachella Valley to develop methods for increasing the amount of fruit produced in the first crop. And to accomplish this end, various methods of pruning and other treatments have been tested, including pruning at practically all seasons of the year, different methods and amounts of irrigation, and the use of fertilizers at different times of the year.

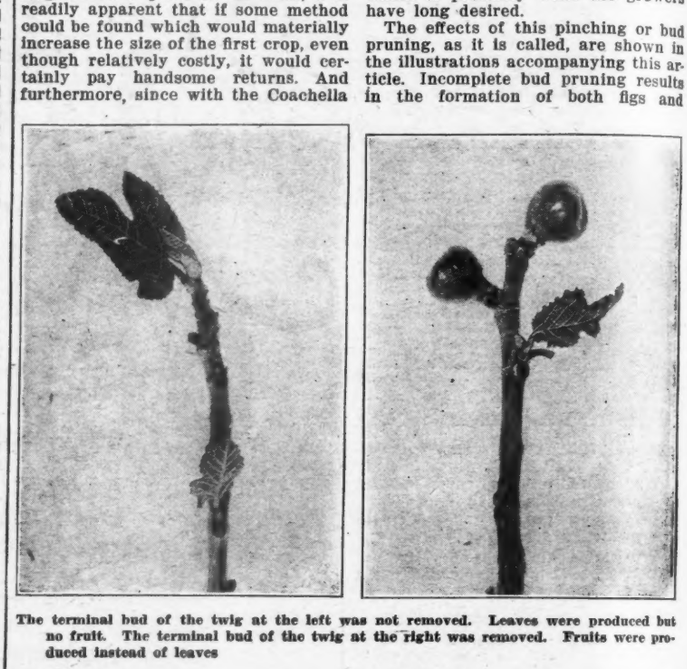
Bud Pruning Developed

While not all of the objects above referred to have been attained, there is no question whatever but that an economic method of markedly increasing the size of the first crop has been developed. Its origin is clouded somewhat in mystery and whether it is a rediscovery of a long forgotten practice employed in other parts of the world or a revival of an ancient art is not known. Credit for its introduction into the valley is by general consent given to that pioneer horticulturist who did so much to demonstrate the horticultural possibilities of the section, J. W. Northrup.

The practice itself is simple and consists merely in removing the terminal leaf buds by pinching or cutting them off immediately or soon after the trees enter the rest period. This is usually done during January, the trees normally going dormant in December and starting growth in February.

The effect of this treatment is startling indeed, being nothing less than the production of figs where normally leaves are put out. It appears that in some way not yet understood, the fruit buds are forced into growth instead of the leaf buds which normally develop with the first flush of growth in the spring. Whatever may be the explanation (this question is to receive investigation during the coming season) it is certain that the branches and trees so treated carry many more fruits and many fewer leaves in March and April than the untreated trees. The net result is a much larger and apparently better quality first crop, which is precisely what the growers have long desired.

The effects of this pinching or bud pruning, as it is called, are shown in the illustrations accompanying this article. Incomplete bud pruning results in the formation of both figs and leaves, thorough pinching in fruit formation only, and no treatment in the production of leaves only. This does not mean, of course, that no first crop figs are produced where bud pruning is not practiced, for as indicated previously, some fruit of excellent quality is normally produced without any treatment whatever. It does mean, however, that unquestionably the bud pinching process does result in the production of more fruit in the first crop.



The terminal bud of the twig at the left was not removed. Leaves were produced but no fruit. The terminal bud of the twig at the right was removed. Fruits were produced instead of leaves

The pruning is ordinarily done with a knife rather than with the finger nails, as experience has shown that thorough work requires the use of a knife. The treatment is laborious and relatively costly since it takes a fast worker at least an hour to prune a moderately sized tree and for large trees double that time. The bud pruning is usually preceded by a moderate thinning of the larger branches, as the tendency of the trees under the intense summer heat is to become dense and compact.

Twig Pruning Results

In addition to bud pruning, a few of the growers have practiced twig pruning, which consists in the removal of the small fruit-bearing twigs after the first crop is harvested. The trees so treated for a few years in succession, however, show distinct indications of dwarfing and the conclusion has been reached that this practice is of doubtful value. It appears probable that the bud pruning itself is also repressive to growth and that it can be overdone at the expense of the development of size and vigor in the trees. It also appears likely that instead of removing the terminal buds from all the branches each season, it may eventually be shown to be a better practice to treat only a part of the

branches each year and in this way to even up the production of fruit and the growth of the trees. It also remains to be demonstrated whether this practice will produce similar results with varieties other than the Black San Pedro, which is practically the only kind grown in the valley, and also whether bud pruning will give similar results in other parts of the state. The Division of Subtropical Horticulture hopes to study these questions and others equally important during the present season.

Practice an Old One

The practice itself is not an entirely new development, as is indicated in the following quotation from the columns of the *California Horticulturist* for July, 1872: "Bearing fig trees should be treated thus: Clip off the ends of the young shoots early in the spring, before the trees show any signs of growth, and as soon as the fruit begins to form along the stem, break off the leaf buds adjoining, in order to throw the entire strength of the sap into the fruit. This is very essential, and gives also more room to the fruit, which it requires in order to acquire flavor. Let the fruit ripen well, and after gathering, cut off the branches which have produced the fruit, inasmuch as young wood will bring you larger and better fruit than old wood."

Dwarf Versus Standard Fruit Trees

By J. L. Stahl
University of California

"WHAT are dwarf fruit trees and is there a place for them in commercial horticulture?" is a question which often comes from a prospective fruit grower.

Dwarf fruit trees are varieties budded or grafted on slow-growing stocks, which produce trees smaller than ordinary or standard trees. They are not stunted or abnormal except in size and might better be called "pigmy" fruit trees. The fruit is usually as large as, and sometimes larger than, the fruit from standard trees of the same variety.

The smallest apple trees are grown by budding or grafting on stock of French or English Paradise apples; a half dwarf tree is produced from working on Doucin roots.

Pears are dwarfed by working on Angers quince. Some varieties do not unite well with quince and are best double-worked by first budding to an intermediate variety, which in turn is budded or grafted to the pear desired. Bartlett is a variety that is usually double-worked. In California, the Hardy is commonly used as the intermediate or second stock.

Mahaleb and Morello stocks will produce small cherry trees. The smallest cherry trees are grown on stock of the sand cherry (*Prunus Besseyi*). Trees three feet in height will often be loaded with fruit.

Myrobalan and native American plums produce half dwarf and the sand cherry true dwarf trees. Peaches are dwarfed somewhat when worked on the St. Julian plum. In America, dwarf trees have never been as popular as standards for commercial orchards on account of the initial expense.

The trees are more costly when the stock is double-worked, also they are planted closer than standards and more are required to an acre.

On the Pacific Coast dwarf types, particularly pears, are well adapted to soil and climatic conditions. The root system is fibrous and shallow so that the trees will thrive where standards may fail. The low trees come in fruiting early and bear consistent crops, which are easily picked. Much of the pruning can be done without the aid of a ladder, and spraying is economical.

Either Bartletts or later pears may be planted in the home garden as close as 12 feet and in small commercial orchards 15 feet each way. Cherries or plums on the dwarf sand cherry stock may be set 10 or 12 feet apart, and 18 feet on Mahaleb root.

The new low price of the Sedan is $895, f. o. b. Detroit. The Special Sedan is $945, f. o. b. Detroit

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That is why Dodge Brothers pioneered in introducing the all steel body, and why they have continued to pioneer by recently improving and perfecting it.

Like the all steel sleeping car—now insisted upon by public opinion—Dodge Brothers all steel bodies are fireproof and as near shock-proof as motor car bodies can be built—an armor of protection in emergencies.

Electrically welded and staunchly braced and reinforced at all points of strain, they are noiseless and built to endure permanently.

They also provide unparalleled vision. The menace of thick corner pillars—blocking the driver's vision at street intersections—is eliminated. Slim, steel pillars take their place.

One-piece windshields and exceptional window areas further increase driving vision and safety.

And while safety cannot be measured in dollars, it is gratifying to know that these improved steel bodies exact no penalty from the purchaser.

With production vastly increased, these and many other vital improvements were announced coincidently with the most attractive schedule of low prices in Dodge Brothers history.

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DODGE BROTHERS MOTOR CARS

Pear growers say that some of the earliest planted pear orchards in northern California were varieties worked on quince root which produced dwarf trees, and although marketing facilities were crude, the orchards were profitable.

In California and in many other localities on the Pacific Coast, dwarf fruits merit more consideration by prospective growers. For home gardens and small commercial orchards they are often the most practicable types to plant.

AMERICAN FRUIT GROWER MAGAZINE: Enclosed find $1 for your splendid fruit journal for three years. I couldn't be without it at $10 a year. It is the best one of five farm papers that I take.—*James L. Boone, Ohio.*

New Horticultural Society Secretary in Virginia

AT THE meeting of the new Board of Directors of the Virginia State Horticultural Society held in Staunton recently, W. S. Campfield of that place was appointed Secretary of the society to succeed William P. Massey of Winchester, who had given notice of his desire to retire from the position at the end of the fiscal year. Mr. Campfield assumed duties as of April 1, and will establish the office of Secretary at Staunton.

Mr. Massey has held the position for 11 years, during which time much constructive work has been accomplished for the growers of the state in such important matters as cedar rust control, reduction of freight rates, advertising Virginia fruit, investigating markets and securing crop information. He gives up the work with a wide acquaintance with horticultural conditions and with many warm friends in all sections of Virginia.

Mr. Campfield has been identified with the fruit growing interests of this and other states for many years, and his wide knowledge of Virginia conditions should enable him to grasp the activities of the society where they have been left off by Mr. Massey.

"Mamma, why has papa so little hair?"

"Because he does so much thinking."

"But why have you so much?"

"Now, my dear—it is time to go to bed."

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Fruit Growing in the Southeast

By O. F. E. Winberg

Grow Higher Quality Fruit

THE FRUIT grower must give more attention to quality production than he has in the past, because the consumers are more and more demanding quality, for which they are willing to pay. If they do not get quality, the consumers would rather not spend their money.

The leaders in fruit and truck growing have been so busy during the past 10 or 15 years with problems of marketing that production and its problems have been forgotten to a considerable extent. We believe that if the fruit grower gives his first attention to producing nothing but the best quality fruit, both in appearance and flavor, the problem of marketing would be solved to a very considerable extent.

No fruit grower should undertake a greater acreage than he can give the very best attention, always looking forward to producing the best quality. It is far better for a man to have five acres, and give that much intensive attention, than to have 10 acres and handle that indifferently. Large plantings are desirable only when sufficient labor and equipment are available for intensive care of the orchard.

Quality production also is important from the standpoint of producing the greatest quantity per acre, because unless insect pests and diseases are kept under control, it necessarily follows that the yield per acre will be reduced. Thus the fruit grower is losing both in yield per acre and in reduced prices for his fruit.

If the grower cannot specialize in fruit growing but is engaged in various activities on the farm, then he should so systematize his work that none of the crops he is growing suffers from lack of plant food, or from cultivation, or from lack of insect and disease control; in other words, the grower should not let any one of his operations be a side issue, because the side line on the farm is mostly neglected. Unless the needed attention is given to a fruit or truck crop, the result will be indifferent, and consequently the initial investment is invariably lost, and the result must be charged to waste, which amounts to a tremendous sum in our fruit and vegetable operations in America. Let us bear in mind that it is not so much a question of the number of acres we are farming, but rather a question of what each acre produces in quantity and quality. The latter will determine the price, and if the fruit grower is operating so that he is producing a maximum quantity per acre, and at least 95 per cent of it is No. 1 quality, then he will find that he will make money even in a year when the prices are low.

Statistics recently compiled covering Satsuma production and marketing in the Gulf Coast section in 1923, show that the difference in prices received in the markets for fruit of good quality as compared with returns from inferior fruit was 79 cents per package. They also show that the No. 1 fruits marketed in 1923 constituted only 14 per cent of the total, while 86 per cent was inferior.

If the growers that year had produced 90 per cent of good quality fruit, the income to the Satsuma growers in the Gulf Coast section would have been $300,000 more.

When we speak of quality here, we have no reference to the flavor of the fruit, but we have reference to the outward appearance.

The reason why 86 per cent of the total in 1923 brought 79 cents less per box than the remainder was due primarily to lack of control of insect pests and disease. In other words, lack of spraying caused the fruit to be covered with scale, rust, black mould and scab. Not only did the grower receive 79 cents per box less for the inferior fruit, but the devitalization of the trees resulting from lack of insect and disease control can hardly be estimated in dollars and cents.

Who Should Boost the Fruit Industry?

BOOSTING the fruit industry or certain truck crops has become a favored pastime activity of people who are not producing or who are not engaged in the production of the particular commodities that they are boosting.

These boosters may be divided into three classes: real estate speculators, local merchants and those who are unable to find any other diversion for their surplus energy. This so-called boosting does not benefit those who are engaged in the production of the commodities that are being boosted. If it really benefits anybody, we are quite confident that in the end it is detrimental to the community and detrimental to those who have put their money and labor into legitimate production.

Boosting of fruit growing in a community results in creating undue enthusiasm. People are going into the growing of fruit without having any conception of the cost of production or of the problems involved. The result is that they may go half way, and then the expected profit does not materialize. When they reach that point, they usually say that the fruit industry is no good. They do not blame themselves, nor do they blame the boosters.

Undue boosting of the fruit industry, or of any one commodity, is more than anything else responsible for inferior quality and over-production. When production has reached a point greater than the demand, it necessarily follows that the prices go down and the individual grower suffers as well as the entire community. When that point is reached, a cry goes up that there is something wrong with the marketing. Any sensible person ought to realize that whenever there is a greater supply of a perishable commodity than there is a demand for, the prices go down to a level at which the business is unprofitable.

If there is any boosting necessary, we believe that the producer should do that himself if he finds it is conducive to the interests of himself and his fellow producers.

It is just as illogical for the banker and business man to boost the farming industry as it would be for the farmer to boost the grocery business in a country town to a point where there would be so many engaged in the grocery business that none would make any money. If the grocery men in town believe there ought to be a greater number engaged in their business to serve the buying public, then why should they not encourage more grocery stores? Likewise, if fruit growers believe it necessary to put on a campaign to induce more people to grow fruit because they cannot fill the demand, then it would seem proper for them to conduct a campaign.

Apply Bordeaux for Citrus Scab

DUE TO weather conditions during the winter and spring, we have every reason to believe that the citrus scab fungi will attack the new foliage and fruit during the latter part of April and the early part of May. Observations in the past show that the growers have lost as much as 90 per cent of their crop as a result of not spraying for sour scab at the proper time.

The present indications are that a small crop of Satsumas will be produced this year, and it behooves the grower to take every precaution to prevent excessive shedding of fruit this spring. It is therefore of the utmost importance that every Satsuma grower spray his trees thoroughly with

Bordeaux mixture 3-3-50. The first spraying should be applied when two-thirds of the petals have fallen and the second application of Bordeaux (same strength) two weeks later. These sprays should be applied with the utmost care and thoroughness, and the leaves and fruit should be well coated with spray.

Essentials in Strawberry Culture

(*Continued from page 7*)

trance of water and dissolved minerals into the plant and for their transfer to the stem and the leaves. The root system of the strawberry must develop and function properly from the time the plant is first established until the crop is harvested, and whatever happens to the root system and the plant during that period may affect the extent and quality of the crop.

Effect of Drought

It is obvious that there can be no absorption by the roots if water is not available. In periods of drought, the water content of the soil may be so low that the root cannot take water from the soil. The water content of soils, when drought occurs, varies with the soil type—ordinary loam soils containing 10 to 15 per cent of water, sand about three per cent and clay soils more than 15 per cent when absorption ceases.

However, during the summer, when the temperatures are high and the leaves are transpiring freely, large amounts of water are needed. The absorption rate must, at such times, be great enough to supply the demand of the plant or it wilts. The water content of clay soils may be sufficient for all needs of the plant, but it may supply the water to the root so slowly that the plant wilts. A sandy soil, however, with only half the water content of the clay, may still supply plenty of water to keep the plant in a thriving condition. Practically, then, the clay soil should be so handled before planting strawberries as to give it a greater water content, or to supply it at a faster rate. A granular texture affords these conditions. The soil particles are then held together in groups which are nearer the size of those in sandy soils, and clay soil with a granular structure actually functions more like a sandy soil.

Most of the fruit is produced by runner plants, which are formed in late summer of the previous year. Droughts during the period of runner formation may prevent the runners from rooting. In periods of severe drought, no new roots and leaves are able to form, and the plants remain small and produce but little fruit.

The absorption of water and dissolved minerals by weeds often reduces or prevents the extension of the root system of the strawberry. Vigorous growing weeds use dissolved minerals just as the strawberry does, but much more rapidly. The weed root system may extend farther into the soil than that of the strawberry root and, in periods of low supply, it may use the available water in the space occupied by its roots so that the strawberry actually wilts while the weeds do not suffer.

When the plant wilts, the rate of absorption, or water intake, is lower than the rate of transpiration, and the cells collapse. No growth can take place as long as wilting lasts. If the wilting is long continued, the plant dies—the younger leaves and roots first and older parts and the crown last.

The other functions of water taken in by the roots are to keep the plant turgid and to afford dissolved oxygen an opportunity to enter through its absorbing surfaces. A supply of oxygen is necessary for all living cells. Oxygen is taken into leaves through special organs called "stomata." Roots get oxygen from the air in the soil but can absorb it only in dissolved form. Hence, the oxygen is taken dissolved in water. Roots must compete, however, with all the bacteria, fungi and other living organisms in the soil which use oxygen. To maintain roots in a healthy condition, the soil must be well aerated, and the oxygen supply must be constantly renewed. Good tillage makes possible good aeration of the upper soil and makes available sufficient oxygen. Another important means of renewal of the oxygen is through rains. When a heavy rain occurs, the water soaks down through the soil, first filling the air spaces in the soil, and then as it moves downward, fresh air from the surface is pulled in to replace it. Daily changes in temperature expand and contract the soil and the water in it. This encourages air circulation and also helps to renew the oxygen supply.

Effect of Diseases and Insects on the Root

One of the most serious diseases of the strawberry is that caused by the root-knot nema or nematode. It is common in the strawberry fields in Maryland and southward, being more serious in regions with mild winters. It will be found in every part of the country where the winters are not more severe than those in Maryland. Though it may cause injury in spots in silt and clay soils, it is most injurious in sandy soils. This is probably because water moves readily through sandy soils and the nematodes are carried with it from plant to plant.

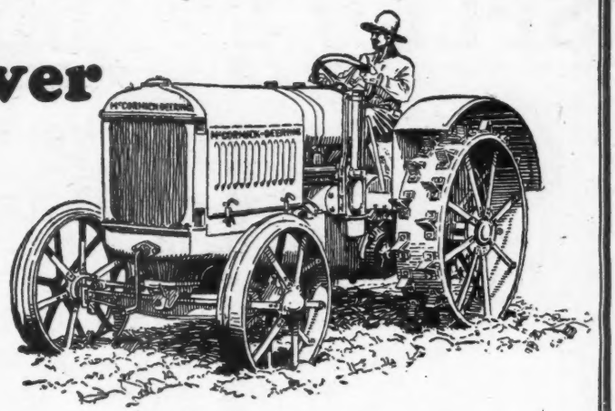
The nematode itself is a very minute animal, shaped like the earth or angle worm. It is smaller than many of the root-hairs and can rarely be seen without the aid of a microscope. It bores into the roots of the strawberry, multiplies rapidly and soon causes galls. These are quite large and noticeable in sections with long growing periods. In Maryland, however, the infestation may be severe, and yet the galls remain small and inconspicuous.

The actual injury caused by the nematode is of two sorts—it interferes with the passage of water through the roots, and it furnishes entrance for organisms producing decay. The nematodes plug up the water-carrying tissues of the roots, making less water available to the leaves. The infested roots do not grow as well, becoming shorter and more branched, as a rule. In severe infestations in the more southern regions, the roots often decay at the galls and become very much shortened. In periods of drought, such plants may soon die.

There are several troubles known as black-root which are caused by fungi or bacteria. No thorough studies of these troubles have ever been made, but their effect is to kill the roots and so shut off the intake of water and dissolved minerals.

White grubs, root weevils and several other insects feed on strawberry roots and, depending on their capacity, they may kill the plant quickly or slowly, or they may reduce the root system and so weaken it from lack of water or nutrients that it can make no runners, or cannot develop its fruit. Root aphis puncture the roots and suck out the water and the cell contents. This both reduces the water available to the tops and weakens the roots. Dying spots may be seen on the roots where the aphis have fed, and fungi undoubtedly gain entrance at such points.

Don't Underpower Yourself!



Farm with the Extra Power of the *15-30 h. p.* McCormick-Deering

WHEN you decide to have a tractor and get ready for years of power farming, consider what the 3-plow McCormick-Deering tractor can do for you over smaller tractors.

The *extra* power of the husky 15-30 McCormick-Deering can be used with profit in all seasons. It plows 10 to 12 acres a day, and that tells the story all along the line. In spring plowing, tilling, and seeding; in grain and corn harvest; it saves many more days when time means money. It cuts down your outlay for expensive farm help. The same labor operates the 15-30 McCormick-Deering as is needed for the smaller tractors. *More power and work in one man's control*—that's the key to farm profit. In heavy soils and on hilly land, you feel the great power of this tractor. It has plenty of power for big harvesting operations, for pulling the corn picker and wagon, for fast threshing and silo filling, etc.

Much more than that, it broadens your opportunities. The 15-30 McCormick-Deering gives you the *time* and *power* to work for the neighbors. Add to your income by outside field work, threshing, silo filling, grinding, shelling, sawing, baling, and hauling. You can do road work for the community, a good source of extra income. You can earn hundreds of dollars a year by custom work with the 15-30. You will have extra power to spare for taking on extra acres and bigger-scale farming. You will have more time to devote to the proper care of your live stock, more time to enjoy life.

Read what the owners of McCormick-Deering 15-30 h. p. tractors say; a few letters out of many hundreds are given below. Look the tractor over at the dealer's store.

INTERNATIONAL HARVESTER COMPANY
606 So. Michigan Ave. of America (*Incorporated*) Chicago, Illinois

Read What These Men Say:

"We have a McCormick-Deering 15-30 h. p. tractor and I aim to tell the public that I think it is the only tractor a common farmer can afford to use."
FRANK DENTON,
Harrisburg, Neb.

"I never knew what real farming was till I got my 15-30 McCormick-Deering. I don't see how I ever got along without it. One can feel that his work amounts to something when he plows 15 acres a day."
WILLIAM V. LUTZ,
Burley, Idaho

"Having used tractors for the past nine years, I am convinced that the 15-30 McCormick-Deering is the best and most efficient tractor built. I can recommend it very highly."
AMOS BOEN,
Austin, Minn.

"My smaller tractor gave me good service, but the 15-30 is much more economical, plowing and cultivating at a greater saving in man hours as well as fuel. I do not see how I could handle my farm on a paying basis without the McCormick-Deering."
E. A. STAMBAUGH,
Green Park, Pa.

"For good, all-around power, the McCormick-Deering 15-30 is the right tractor, in my estimation. . . . My other tractors didn't furnish enough power."
C. B. GOODWIN,
San Gabriel, Calif.

The Three-Plow 15-30 Tractor
McCORMICK-DEERING

SUCCESS and FISK TIRES

Tire dealers in towns which are trading centers for the small surrounding communities are having great success in selling Fisk Tires.

The Fisk Line has always included a tire built for unusually hard service—one which made an extra good showing on country roads.

The Fisk dealer can meet your need, whether it be quality, comfort, or price —EVERY Fisk Tire is a good value.

FISK TIRES

The Rate of Development of Apple Flowers

By W. A. Ruth
University of Illinois

THE AMOUNT of spraying equipment needed in a commercial apple orchard depends partly upon the number of days of good spraying weather during which a given application can be made, as well as upon the size of the orchard. Moreover, the time available depends not only upon the time when spraying is physically possible, but upon several other factors. These include the rate of development of new foliage and fruit surface, the rate of erosion of the spray and, most important of all, the rate at which the fruit passes through certain stages of development. For instance, it is a fact that the most important codling moth spray must be applied in the period starting at petal fall and ending with the closing of the calyx lobes. Another important application, called the pre-bloom, or pink spray, must be applied, to be most effective, during the time which elapses between the separation of the flowers and the opening of the petals.

Obviously the duration of such periods depends upon the weather and particularly upon the temperature. They are therefore subject to variation from year to year. It would be natural also to look for varietal differences. Seasonal and varietal differences in the pre-bloom and calyx periods are shown in Tables 1 and 2. These periods are subject to recording; they are definitely limited by the comparatively easily recognized stages of development described above. Other periods when applications are needed are probably as definite, but their limits are not so easily recognized.

TABLE 1.

Number of Days from the Separation of the Flowers to the Opening of the Petals.
(Pre-Bloom Spray.)

Variety	1920	1922	1923	1924	1925
Ben Davis	4	6	..	5	5
Crab	4	3	..	3	6
Transparent	..	..	..	4	5
Winesap	4	3	..	2	5

TABLE 2.

Number of Days from the Shedding of Three-fourths of the Petals to the Closing of the Calyx Lobes.
(Calyx Spray.)

Variety	1920	1922	1923	1924	1925
Ben Davis	14	6	12	11	6
Crab	6	6	10	10	5
Transparent	..	..	..	10	5
Winesap	3	5	..	12	5

Tables 1 and 2 show that the time available for making the pre-bloom spray is usually shorter than the time during which the calyx spray can be applied. Several interesting facts can be brought out. Perhaps the most outstanding of these are as follows:

1. A very few days are available for applying the pre-bloom spray. The average is four days. The extremes are two and six days.

2. Usually more time intervenes between the falling of three-fourths of the petals and the closing of the calyx lobes than between the separation and opening of the flowers. There is therefore usually less time for the pre-bloom spray than for the calyx spray.

3. The average number of days for making the calyx application is eight. The extremes are three and 14.

4. Seasonal differences in the duration of both stages are often important. For example, the sepals closed in 1923 and 1924 about twice as fast as in 1922 or 1925.

5. Varietal differences are occasionally wide, as in the pre-bloom spray period in 1922 and 1924, and the calyx spray period in 1920. In the seasons of 1922 and 1924 the period for applying the pre-bloom spray to the Ben Davis was twice as great as the period for applying it to the Winesap. In 1920 the varietal difference in the extent of the period for applying the calyx spray to these two varieties, which were three and 14 days, was remarkable. Usually varieties behaved more alike in the closing of the sepals than in the separation and opening of the flowers.

6. Seasonal differences in the behavior of any one variety have been, at least to the writer, surprising. For example, the first period, in the case of the Winesap, has extended over four, three, two and five days in the four record years. The duration of the second period has been, in the same variety, three, five, 12 and five days in the four years.

The time elapsed, of course, is likely to include rainy weather, but probably not so much rain when either period passes quickly as when it passes slowly.—*News Letter, Illinois State Horticultural Society.*

Food Value of Apples

THE BODY requires various food elements for the maintenance of life. Some of these are required for tissue formation, others for heat and energy production, and still others for the building of bony structures.

The principal elements required for building and maintenance of the body are known as concentrates. They consist of protein concentrates, such as meats, eggs, cheese, leguminous foods, etc.; of carbohydrates and fats, such as oils, fats, meats, cereals, potatoes, etc.; and of water and mineral substances.

Fruits, and particularly apples, do not contain large quantities of the concentrates. They do, however, contain certain percentages of each of the important food elements and they therefore have a real nutritional value. The following table shows the composition of the edible portion of an apple:

Compositon of Edible Part of Apple

	Per cent.
Water	84.6
Protein	0.4
Carbohydrates (sugar, etc.)	14.2
Fats	0.5
Ash	0.3

The mineral matter of the apple is composed of the following constituents:

Composition of Mineral Matter of Apple

	Per cent
Calcium	0.007
Magnesium	0 008
Potassium	0.127
Sodium	0.011
Phosphorus	0.012
Chlorine	0.005
Sulphur	0.006
Iron	0.003

It is apparent that the apple does not carry large quantities of any of the various nutritive elements. Furthermore, the various elements are not present in the proper proportions for a well-balanced ration. Such a state of affairs, however, is true of many foods. As a matter of fact, there are few foods which in themselves supply either the proper amounts of nutritive elements or supply them in the proper portions for a well-balanced ration.

Besides the nutritive elements in the apple, we must consider other features. The juice of the apple, which constitutes 85 per cent of the fruit in the fresh condition, is in intimate contact with the solid matter and acts upon the body in a much more influential way than would the same quantity of water taken as a drink. It passes through the digestive system with the various food elements and thus exerts a more beneficial influence than would the same quantity of water taken in other ways. It can readily be seen that the water carried by an apple in connection with the other food elements has a stimulating influence on metabolism. Furthermore, the apple, like all other fruits and vegetables, carries a considerable quantity of vitamins, and recent investigations have shown that these bodies are quite necessary for the health of people.

Vetch Does Well in Georgia

LAST fall county agents and other extension authorities in Georgia conducted a strenuous campaign for the sowing of vetch as a cover crop. As a result, large quantities were sown. Practically every important agricultural county sowed a car or more of vetch seed.

Fortunately, weather conditions were favorable last fall, and a good stand was secured. Favorable winter weather followed, and the vetch has made an excellent growth. It is now presenting a wonderful appearance, that is, in the case of plantings which have not been plowed under.

Many growers were disappointed with the growth which had been made and plowed under their vetch early in the spring. They were unaware of the fact that vetch makes a very rapid growth in the early spring. The growers who delayed the spring plowing have been rewarded with a tremendous growth. This growth not only provided excellent pasture for stock and poultry, but it will greatly enrichen the soil when it is turned under. Vetch is one of the richest legumes in nitrogen that can be grown. It is a little difficult to secure stands of in the fall under unfavorable weather conditions, and in some localities it is likely to winter kill. However, notwithstanding these two disadvantages, it is a most excellent crop to grow in orchards and in farming in general.

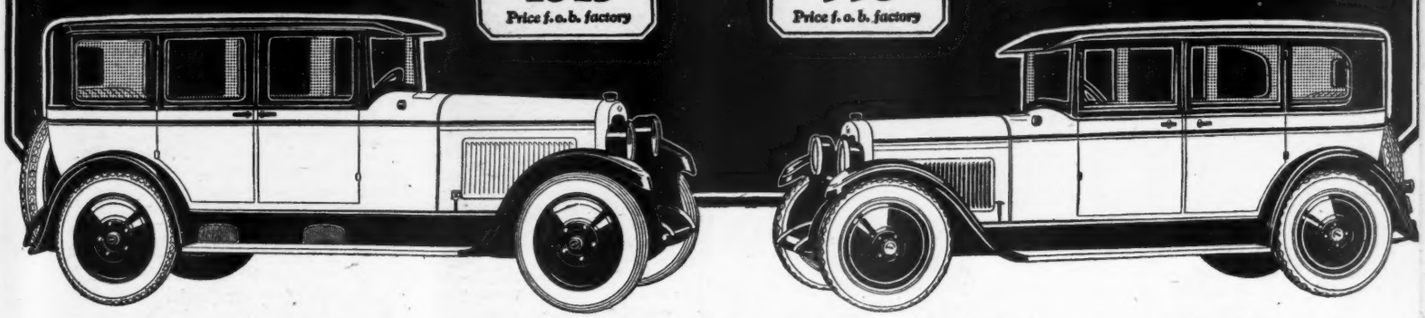
NASH

NASH AJAX SIX

Lead the World in Motor Car Value

Special Six 4-Door Sedan $1315 Price f. o. b. factory

Ajax Six 4-Door Sedan $995 Price f. o. b. factory



At These Prices the Value Is Unequaled

In both the design and mechanical construction of the Special Six and Ajax Six enclosed models shown above, Nash has paid special attention to fulfilling the double duty requirements of hauling loads as well as carrying passengers which most farmers demand of their motor transportation.

They are cars of unusual power, and exceptional smoothness and flexibility. And the motors, with their full force-feed lubrication, are especially engineered to provide sustained high speed.

The rugged construction of these chassis with their rigid cross-member reinforcements will particularly attract your attention because of what this design means in the way of enabling the car to stand up and maintain efficient performance in the hardest kind of day-in and day-out use.

At their decisively low prices these two models are unequaled in point of sheer quality and value, and their popularity among farmers thruout the country is increasing with unusual rapidity.

There are sixteen models in the Nash-Ajax line and prices f.o.b. factory extend from $865 to $2090, with 4-wheel brakes, full balloon tires, 5 disc wheels included *at no extra cost.*

(3478)

Purchase Fruit Plants With Caution

By Anna Wade Galigher

DON'T buy nursery stock from a stranger unless you are positively sure he is trustworthy and represents a reliable firm. This is the conclusion I have reached as a result of my experience.

During the past few years, I have learned of a great many beginners, and even of some experienced growers, who have patronized nursery "sharks" only to learn later that their money had been invested in a lot of worthless stock.

Last year one of my neighbors, a beginner, bought $140 worth of trees and small fruit plants. He was told by a salesman that without question the plants could be set safely in the fall of the year. It may be possible to set the plants successfully in some localities, but planting at that time is not adapted for this locality. This neighbor will never again buy from such a salesman.

During 1922 a salesman appeared in our vicinity who offered for sale a wonderful everbearing strawberry which he called the I. W. W. He made extravagant claims for this variety, and he succeeded in selling plants to a number of persons. The plants proved worthless, as might have been expected.

Last July the writer was interviewed by a stranger who claimed to represent a nursery in the South. He talked fluently of small fruits in general and of everbearing strawberries in particular. After showing me a brilliant catalog, he began to talk of selling me some plants. "Now," said he, "here is the finest everbearing strawberry in the world." "What is the name of this everbearer," I inquired. "It is the Senator Dunlap," he replied. That was the "straw that broke the camel's back." The salesman lost no more time in trying to sell plants to me after hearing what I told him.

Destroy All Peach Drops

OBSERVATIONS taken at the Federal Peach Pest Laboratory at Fort Valley, Ga., emphasize the importance of prompt destruction of all peach drops, according to E. H. Rawl, Associate Extension Horticulturist.

Practically all of the small peaches which drop to the ground within a few weeks after the "shucks" have been pushed off, are badly infested with curculio worms, about 75 to 90 per cent of the drops containing one or more worms.

Growers should bear in mind that the larvae remain in these drops and that after a process of development, they emerge and enter the ground for pupation. Each larva prepares a cell within about three inches of the surface, in which it undergoes transformation and from which it later emerges as the adult beetle. This beetle gives rise to the second generation that in turn lays eggs and causes wormy peaches just before picking time.

It is quite obvious that picking up and destroying the early drops will prevent heavy infestation at picking time. The infested drops should be collected and buried at least 24 inches deep. It is usually advisable to make two or three gatherings of the drops. Special care should be taken that the very small shrivelled peaches are gathered, for they are more likely to contain worms than the larger drops.

In one of the Georgia observations, two and one-half bushels of dropped peaches were placed in a wire screen container and watched carefully. Within a few weeks 13,000 larvae emerged from these drops. This number would have produced sufficient second brood curculios to badly infest 100,000 peach trees. Such conditions emphasize the importance of using proper control measures in connection with the early peach drops.

In addition to picking up the drops, it is a good thing to disk or harrow the surface of the orchard frequently. The tools should loosen the ground at least three inches deep. This will break up the pupal cells and expose the inactive insects to heat and weather. The pupal stage usually averages about one month and disking at intervals of one week should continue from the time the peaches bloom until late varieties are almost ripe.

Grape Leaf Hoppers

GRAPE leaf hoppers, tiny, greenish insects always present in greater or less numbers in vineyards, occasionally do considerable damage to the foliage and reduce the quality of the fruit, say the entomologists at the New York Agricultural Experiment Station at Geneva who have made a study of the methods for combating the pest.

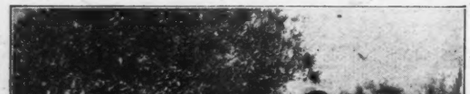
Most of the damage is done by overwintering adult insects which, in the early spring, feed largely on strawberry and raspberry leaves, although they are also found on blackberry, currant, gooseberry, catnip, Virginia creeper, burdock, beech and sugar maple, declare the station specialists. Neglected fence rows, brush, weeds, tall grass, etc., furnish ideal winter protection for the pests, and vineyards in the neighborhood of such places usually suffer most from leaf hopper injury. The adults lay their eggs on the grapevines and the young hoppers hatch out in large numbers, usually about the middle of June.

Cleaning up the hibernating places is one effective step toward combating leaf hoppers, say the entomologists, while very good results have been secured from spraying for the young hoppers with nicotine sulphate in water or with Bordeaux mixture. The nicotine is added at the rate of one pint to 200 gallons (1-1600) of the spray mixture and must be applied from below the vines, as the insects congregate on the young shoots at the base of the vines. Only the young insects are reached by the spray because the adult hoppers are too active.

Chemical analyses of grapes from sprayed and unsprayed vines showed a gain of from eight to 68 per cent in the sugar content of the grapes from the sprayed vines over those from unsprayed vines. Samples of unsprayed grapes were analyzed which had as much as 20.6 per cent more acid than the sprayed grapes.

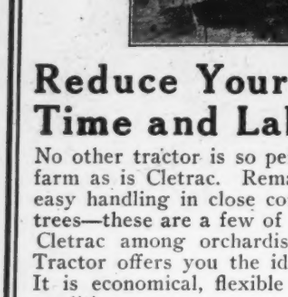
AN ABSTRACT of the 1925 farm census shows that Illinois has more radio sets than any other state. The number of sets in the leading states is as follows:

Illinois	27,434
Kansas	11,189
Minnesota	11,770
Indiana	8,665
Wisconsin	8,248
New Jersey	6,256
South Dakota	4,866
North Dakota	4,729



Reduce Your Operating Expense, Time and Labor With CLETRAC

No other tractor is so perfectly suited to the needs of the fruit farm as is Cletrac. Remarkably low cost operation—extremely easy handling in close corners—ability to work right up to the trees—these are a few of the features that make fast friends for Cletrac among orchardists everywhere. The Cletrac Crawler Tractor offers you the ideal power unit from every standpoint. It is economical, flexible and thoroughly dependable under all conditions.



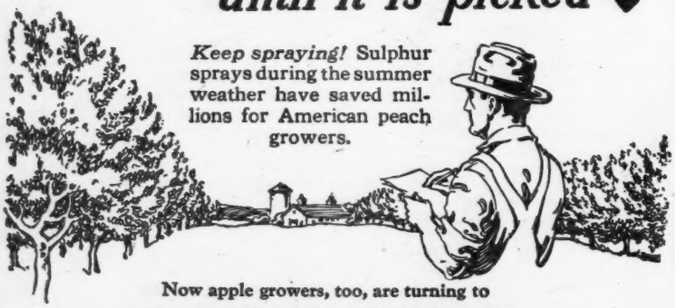
"Snap Lubrication"—90% Power Efficiency

The powerful Cletrac "K" is the only tractor made with the instantaneous oiling system. A push of a plunger and the "Snap" Lubricator thoroughly oils the lower track wheels without stopping the machine. Cletrac "K" pulls practically its own weight, **delivering 90% power efficiency!**

If you are interested in reducing labor costs in your orchard—in getting more work done at less expense—and want a power plant that handles all types of farm and orchard work—profitably—write for full information today.

The Cleveland Tractor Company
Cleveland, Ohio

You can't count your crop until it is picked!



Keep spraying! Sulphur sprays during the summer weather have saved millions for American peach growers.

Now apple growers, too, are turning to

ORCHARD BRAND
DRITOMIC SULPHUR

for protecting the growing and ripening fruit. *Dritomic* serves the same purpose as our standard Atomic Sulphur product—with greater efficiency and greater economy.

DRITOMIC is a dry powder, with 90% available sulphur. It is easy to handle, goes into suspension readily, flows freely and covers a large area. This economizes on material, for a thin even film is quite sufficient. You can use it alone, or with Orchard Brand Arsenate of Lead, as needed.

ORCHARD BRAND INSECTICIDES

Orchard Brand Dritomic Sulphur will help you harvest a bigger crop of greater market value.

Dealers everywhere stock and sell Orchard Brand Insecticides. Ask yours—or write us direct.

For the man who prefers dusting we make ORCHARD BRAND *SULPHUR DUSTS of several kinds*

Information on request

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Orchard Brand Products—Standard with American Fruit Growers, Inc.

Book Review

The Nursery Manual

NO SUBJECT in the field of horticulture is more interesting than that of plant propagation. Furthermore, the subject is of tremendous commercial significance. Every practical fruit grower should be familiar with methods of plant propagation, both from the viewpoint of the practices employed and the principles underlying plant reproduction. Without such understanding, a grower cannot enjoy his work to the greatest extent; neither can he conduct his operations most efficiently.

Fruit growers will find "The Nursery Manual," by L. H. Bailey, an interesting and valuable book on plant propagation. The book has gone through 22 editions, the first appearing in 1891. The status of the author as a horticulturist is sufficient endorsement of the book.

The book is divided into two main parts. The first discusses and classifies the principles and methods involved in propagating plants, and the second gives specific directions for propagating numerous horticultural plants, including flowers and forest trees as well as fruits.

The Nursery Manual is published by the Macmillan Company of New York and sells for $2.50.

Tomato Production

THE TOMATO was formerly considered a poisonous plant whose fruit was unfit for human consumption. This viewpoint has been entirely dispelled and the tomato has become in recent years one of the most extensively grown vegetables. The commercial crop alone is now worth $50,000,000 annually, and probably millions of plants are grown in addition in home gardens.

This vegetable is now so important, and so much information has accumulated about it, that separate books are being published regarding it. The most recent one is "Tomato Production" by Paul Work of the Vegetable Gardening Department of Cornell University and Associate Editor of the *Market Growers' Journal*. The position of the author in the field of vegetable growing is a strong testimonial in behalf of the book. The book summarizes in concise and practical fashion the important information in existence regarding this interesting and valuable vegetable. There are 10 chapters, each dealing with an important phase of tomato culture. The book is published by the Orange Judd Publishing Company of New York and sells for $1.25.

The Strawberry

THE STRAWBERRY is the leading small fruit of America. It is a native of the western hemisphere and can be grown in practically every locality of the land.

Numerous books and pamphlets have appeared on strawberry culture, but it is a fruit about which new publications are frequently needed, for much investigation has been made of the strawberry, and new information is constantly being developed.

"The Strawberry," a new book on the subject, has just been published. The author is Samuel Fraser, fruit grower and nurseryman, and formerly connected with Cornell University. The book treats the subject from a practical standpoint. It gives information that will prove valuable both to home gardeners and commercial growers. The book seems to be applicable for use over a wide territory. It is published by the Orange Judd Publishing Company of New York and sells for $1.25.

Fruit and the Fruit Trade

"FRUIT and the Fruit Trade" is the title of a new book written by Lord Fairford and published by Sir Isaac Pittman and Sons, Ltd., of New York and London. The book is apparently intended chiefly for those who are interested in the sale and distribution of fruit and who desire to know such facts regarding kinds of fruit, fruit growing sections, and methods of production and marketing as are important in this connection.

The book is a comparatively small one, containing only 154 pages, yet it is surprising how much information the author has been able to impart in this limited space. There are statistics showing production in different fruit sections of the world. The important problems of each section and the methods employed by the growers in producing, shipping and marketing fruits are outlined. The language is well condensed, yet it is clear and satisfying. The style, diction and arrangement of the author are especially to be commended.

For those who wish to get a clear picture of the fruit industry in different parts of the world with a minimum of reading, we recommend this book. It can be obtained from Sir Isaac Pittman and Sons, Ltd., of New York for $1.75.

Publications of Interest to Fruit Growers

THE FOLLOWING are some of the publications of interest to fruit growers that were received during the past month. Distribution of some of them may be limited to the state in which published, but we believe that in most cases growers can secure copies free of charge by addressing a request to the institute publishing them.

A Promising Remedy for Black Measles of the Vine, by L. O. Bonnet. Circular 303, Agricultural Experiment Station, Berkeley, Calif.

Drainage on the Farm, by Walter W. Weir. Circular 304, Agricultural Experiment Station, Berkeley, Calif.

The Blackberry Mite, the Cause of Redberry Disease of the Himalaya Blackberry and Its Control, by E. O. Essig. Bulletin 399, Agricultural Experiment Station, Berkeley, Calif.

The Utilization of Surplus Plums, by W. V. Cruess. Bulletin 400, Agricultural Experiment Station, Berkeley, Calif.

Diseases of Brambles in Illinois and Their Control, by A. S. Colby and H. W. Anderson. Circular 305, Agricultural Experiment Station, Urbana, Ill.

The Fruit Tree Leaf Roller and Its Control Under Illinois Conditions, by W. P. Flint and J. H. Bigger. Entomological Series Circular 9, State Natural History Survey, Urbana, Ill.

Pruning Fruit Trees, by Frank H. Beach and Clyde S. Holland. Bulletin 8, Volume 21, Agricultural College Extension Service, Columbus, Ohio.

Concerning Wholesale Market Preferences for Fruits and Vegetables in Providence, R. I., by Roger B. Corbett. Bulletin 203, Agricultural Experiment Station, Kingston, R. I.

The Apple and Peach Industries of Virginia, by the United States Department of Agriculture and Virginia Department of Agriculture. State Department of Agriculture, Richmond, Va.

A Method for the Control of Crown Gall in the Apple Nursery, by M. B. Waite and E. A. Siegler. Department Circular 376, United States Department of Agriculture, Washington, D. C.

Apple Scab, by John W. Roberts and Leslie Pierce. Farmers' Bulletin 1478, United States Department of Agriculture, Washington, D. C.

Relation of Soil Conditions and Orchard Management to the Rosette of Pecan Trees, by J. J. Skinner and J. B. Demaree. Department Bulletin 1378, United States Department of Agriculture, Washington, D. C.

A sign over a garage in a small western town reads: "Use genuine parts. No substitutes are as good. Ask the man with a wooden leg. He knows." —*B-C-A News.*

Pacific Northwestern Trip of the American Pomological Society

THE AMERICAN Pomological Society will make a tour of the fruit districts in the Pacific Northwest, starting from Chicago about June 20. This trip will take about 15 days and will include stops in the following interesting fruit districts:

Boise or Payette.—From Boise or Payette the party will visit the famous Jonathan and Rome Beauty districts of southwestern Idaho. This will be an opportunity to see an extensive apple district which is noted for the high color of its fruit.

Hood River. — Hood River is the heaviest producer of Yellow Newtown and Spitzenburg apples in the Northwest. The valley is noted for its scenic beauty as well as its high quality apples. From Hood River the trip to Portland will be made over the famous Columbia Highway, one of America's most beautiful drives.

Portland and Willamette Valley. — From Portland we will visit both the east and west sides of the Willamette Valley. This section is noted for its production of Italian prunes and English walnuts. There are also extensive plantings of pears, Loganberries and other small fruits.

Puget Sound.—In the Puget Sound territory there will be an opportunity to visit Seattle, Tacoma and Puyallup. At Puyallup we will have a joint meeting with pomologists, entomologists and pathologists of the Northwest. Puyallup is noted for its heavy production of raspberries and other small fruits, and also is becoming one of the most important centers of bulb production in the United States.

Yakima. — The Yakima district is not only famous for its apple production but also for the production of pears, prunes, peaches, apricots and cherries.

Wenatchee. — In Wenatchee we will visit the most concentrated and specialized apple district in the world.

Advantages of the Trip

On this trip you will be associated with the leading fruit growers of the eastern and central states. In the Northwest you will have an opportunity to become acquainted with the men who have built up the western apple industry, which now makes up 46 per cent of the commercial apple crop. There will be an opportunity not only to become acquainted with local problems and orchard practices, but also to visit and get first hand information on some of the largest canneries, evaporators, cold storages and packing houses of the country. On the return trip we will visit one of the national parks.

Low Cost of the Trip

By making this trip while summer rates are available, and by chartering Pullman cars, we are able to get a very low transportation rate, and also will eliminate the necessity of hotel expenses. Growers' and shippers' organizations and chambers of commerce of the Northwest are nationally noted for their hospitality and have already signified a willingness to co-operate in this trip by furnishing automobile transportation through the fruit districts to be visited. The actual necessary expenses of the trip need not exceed $200 or $225 from Chicago and return.

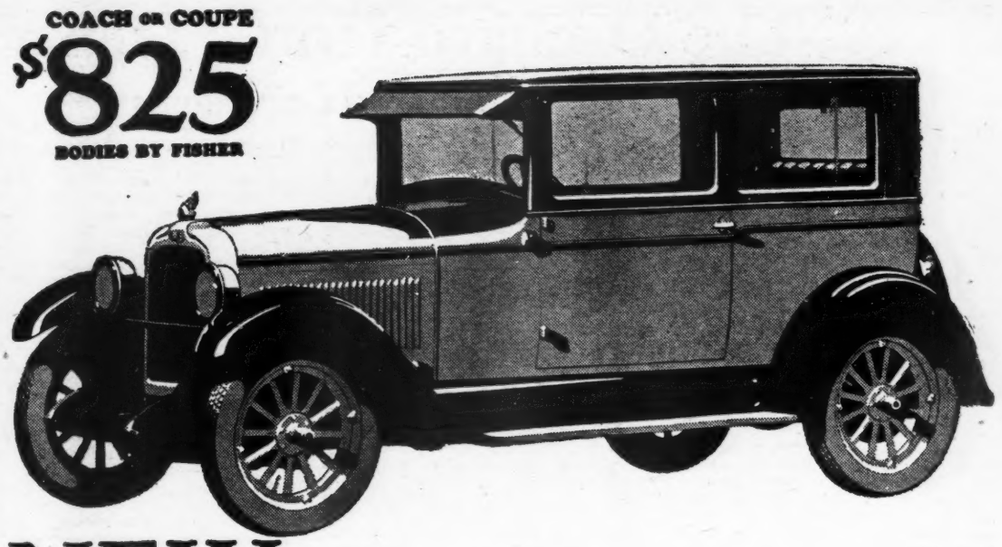
$50,000 Verdict in Nursery Case

JUDGMENT against the Southern Nurseries of Winchester, Tenn., for $50,000 and interest, the whole running to approximately $53,500, was awarded by a jury in the federal court Thursday morning in behalf of W. E. Schmick of Hamburg, Pa.

The judgment followed suit for $100,000 damages alleged to have been sustained as the result of having planted trees not true to type and name shipped by the nursery during 1920 and 1921.

The complainant, who owns a 320-acre orchard in Pennsylvania, in 1920 and 1921 purchased from the Southern Nurseries approximately 30,000 fruit trees. After the trees had been cultivated and grown to maturity, it was found, the complainant charged, that approximately 6500 of them were not true to type and name, and that he had suffered injury as the result of the alleged substitutions.

The complainant was represented by Seth Walker, W. L. Granberry and Frank M. Bass of Nashville, while the defendant was represented by Frank L. Lynch of Winchester, W. E. Norwell of Nashville, and N. H. Camp of Knoxville.—*Nashville (Tenn.) Evening American (March 11).*



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PONTIAC SIX

CHIEF · OF · THE · SIXES

Begin Cultivation of Pecan Orchards Early

CULTIVATION of pecan orchards should start early in the spring, according to G. H. Blackmon, pecan specialist of the Florida Agricultural Experiment Station. The winter cover crop or crop of weeds, as the case may be, should be turned under early in the spring, and the soil should be put into proper condition for receiving the summer cover crop of legumes.

It is a good thing to maintain a dust mulch during the spring months so as to retain the greatest possible amount of water and thus promote the best growth of the trees. An Acme or disk harrow will prove one of the best tools to accomplish this purpose.

The summer cover crop of legumes should be planted during the last half of May in the southern states, according to Prof. Blackmon. Planting at this time will insure a large amount of green material that can be plowed under during the fall or winter months.

Cultivation Superior to Good Mulch

MOST New York orchards should be cultivated during the early part of the season, and a cover crop, preferably a legume, should be sowed in the early fall, according to the New York Agricultural Experiment Station. This practice is claimed to have decided advantages over the sod mulch system, at least for most districts of the state.

The station, in tests extending over 10 years, secured an average yield per acre of 69.16 barrels of apples from an orchard left in sod. A yield of 116.8 barrels per acre was obtained from an orchard cultivated during the same period. The cultivated trees made a decidedly better growth than the ones in sod.

The beneficial effects from cultivation are believed to result from the saving in soil moisture and to the lack of competition between the trees and the sod for moisture and plant food. Also insects and diseases are more readily kept under control in the cultivated orchards than in the sod orchards, due to the protection afforded by the sod during the winter.

The station recognizes, however, that on soils that are rocky or which are so hilly that cultivation would be difficult it may be impracticable to cultivate. Furthermore, hilly land may wash badly if cultivation is practiced. It must also be recognized that cultivation is somewhat expensive on hilly and rocky land. In view of such conditions, it may be advisable, in the opinion of station experts, to practice sod cultivation in some orchards on hilly or rocky land. On most apple soils in New York, however, the station believes that tillage will prove more profitable than sod culture.

While the station's recommendations pertain particularly to conditions in New York, the recommendations will prove applicable in many other states, particularly in eastern and northeastern fruit sections.

AMERICAN FRUIT GROWER MAGAZINE: Please find enclosed $1 for renewal of my subscription to the AMERICAN FRUIT GROWER MAGAZINE. I do not wish to miss a single number of your valuable magazine. My intention is to be a permanent subscriber.—*V. W. Neubauer, Iowa.*

The Orchard Home Department

By Mary Lee Adams

High Road and Low Road

HOW OFTEN it is said of someone—usually a woman—that she could have distinguished herself in this or that if she had devoted herself to it. She had such a talent for it. Then everyone sighs and says what a pity it is that she had to devote herself instead to housekeeping, or to children, or what not.

And in one case out of a thousand, it really is a pity. Maybe similar things have been said to you about yourself and have left you brooding over the cruelty of fate. You might have been distinguished instead of merely useful. As a girl you "promised to be musical," you "promised to be artistic," you "had such a sweet voice."

But there's a difference, a deep and wide one, between what we call talent (which is often just a facility) and real worth while genius. Where genius exists, everything else should, and generally does, give way to it. It is irresistible and sweeps its owner along with it. In many instances, it blesses everyone, save its hard-ridden possessor.

Even if you happen to be the rare exception who would have developed under other circumstances into a noted figure, have you lost so much after all that you need mope and fret about it? It is almost certain that the singleness of aim demanded by fame, would have dwarfed you in some respects, and you would be a far less well-rounded character than you have become to be by simply turning your hand to the great number of things it has found to do.

And you would be no happier. While you would be admired as a genius, you would scarcely be as truly beloved and loving as you are in your homely capacity of wife and mother. But putting aside one's ego—as far aside as possible—don't you agree that you were probably just a bright, talented girl who might have met with bitter disappointment in the desperate struggle to scale the heights of genius? "You take the high road, and I'll take the low road, and I'll get to Scotland before you," runs the old song which still rings true today.

The Rickety Cereal

MOST orchard women know something of the relative values of different foodstuffs. To give her household a well-balanced ration is the aim of the intelligent housekeeper. The mother of young children especially takes pains to inform herself as to what is best for the little tots, and she welcomes any new light thrown upon the subject of how to preserve them in health and promote sturdy growth.

It has been commonly accepted that well-cooked cereals are as safe as any known nourishment. Prof. Mellanby, an Englishman who has been making researches in foodstuffs, says "No." He has discovered a substance in many cereals, including oatmeal and bread, which is adverse to bone formation in young animals. Lack of bone formative substance in the diet results in rickets in children. Even grown persons must offset the harmful results of heavy consumption of cereals by what may be called an antidote.

Antidotes are fortunately not difficult to find. The fats contained in milk and fish completely antagonize the injurious substance in the cereals. Any fat serves the purpose to some degree. The eating of butter with bread is not purely a gratification of the palate but, like so many of our seemingly chance food combinations, is founded on purely scientific rules of health.

A troublesome point is that foods containing the all-important vitamin A are apt to be more expensive than the cereals which contain the newly discovered injurious substance which may be called anti-vitamin A. The problem is simplified for the orchard woman by the fact that she can usually serve an abundance of milk, and her family has access to unlimited sunshine, which is also ranked as an antidote to the cereal poison.

An Awakening Conscience

SPAIN, the country of an admittedly cruel race, the land of the bull fight, takes a forward step by organizing a society for the prevention of cruelty to animals. Ironically enough, no effort will be made to put an end to bull fighting. It is reported that several members of the committee are themselves very keen over the national sport.

So easy is it to war against a vice that makes little appeal, and so difficult is it to renounce a "darling sin." The gentlemen of the committee would get little satisfaction out of practicing the brutality of a muleteer. A better reason for not interfering with the bull fight is that it is regarded as hopeless, at this time, to stop what has been for many centuries a widely (and wildly) enjoyed national pastime.

Something will surely be gained. The first step counts for much in such a movement. Efforts will now be made to mitigate the sufferings of the deplorable horses which have always played such a sorry part in the gory spectacle. We are fortunate in belonging to a race which is distinguished by its kindness to animals. It is interesting to learn that the suggestion of an American woman in Madrid, Miss Violet Wood, Secretary of the Council of Justice to Animals, was the germ of the present organization.

Plant Plenty of Vegetables

IS YOUR vegetable garden planned or planted? Let this summer find you with an abundance of fine fresh vegetables. It is an economy in more ways than one, and it should be the foundation for next winter's food supply.

Vegetables are increasingly appreciated and demanded in winter. A good summer garden sets many an appetizing, health-containing can on the store room shelves.

Personally, I'd sooner run short of any other vegetable than tomatoes, and that's a lucky choice. Tomatoes are so responsive to a little care and yield so lavishly. Even the inexperienced housewife can hardly fail in canning them.

Doctors are not lacking to advise apple growers that a truer form of our beloved slogan would be "A tomato a day keeps the doctor away." And how many tempting dishes are made either wholly or in part of tomatoes; what cool, delicious salads in hot weather; what invigorating soups in autumn; and in winter what a splendid source of the vegetable acid which is so essential and so generally wanting in winter vegetables.

A Song of Spring

O little buds all burgeoning with spring,
You hold my winter in forgetfulness;
Without my window lilac branches swing,
Within my gate I hear a robin sing—
O little laughing buds that lift and bless.

So blow the breezes in a soft caress,
Blowing my dreams upon a swallow's wing;
O little merry buds in dappled dress,
You fill my heart with very wantonness—
Little buds all burgeoning with spring!

—Thomas S. Jones, Jr.

I sat beside a little boy who sniffled and snuffled until I could stand it no longer. "Little boy," I demanded, "Haven't you a handkerchief?" "Yes," he replied, "But my Mama told me never to loan it."

Girls! Meet the Beautician

AS APPLIED to herself, no word is less melodious in the ear of woman than the term "homely." Even in far-off days, while the hateful word was still a-coining, homely, by its very composition, showed that the woman who could not hope to delight the eye was inclined to stay at home.

There she was shielded from a critical public in a domain where the so-called homely accomplishments (such as the baking of perfect pies) held a scarcely less powerful appeal to the masculine palate than outward loveliness did to the eye.

As Abe Martin would say, "What's become of the old-fashioned homely girl?" of whom we once thought that, like the poor, she would be always with us. Small chance today that she is hidden away in a house. Throughout the length and breadth of this fair motor-driven land, it would be hard to find any home-keeping person not actually bedridden.

Enter the Beautician

Granting the exceptions that go to prove the rule, the homely girl has mysteriously disappeared. Some claim she has actually ceased to exist. Who is responsible for having made way with her?

Methinks I hear a grand competitive chorus of doctors, dieticians, dressmakers, dancing teachers, beauticians and cosmetologists shouting in unison "I am!" The last two, the beauticians and cosmetologists, shout loudest of all from the myriad beauty parlors scattered to the furthest corners of the U. S. A.

I like to allude to them thus by their self-conferred, high-sounding titles. No doubt they, with all the rest, play their part in concealing, softening or eliminating homeliness. But the greatest factor by far is the modern woman's conviction that homeliness is unnecessary, and her firm determination that she will be at least good looking and well groomed.

There may have been a time when simple cleanliness (as in the original form of the familiar saying) was next to goodliness, goodliness in that age signifying good looks. But more is now demanded. It is not enough that the modern woman be scrupulously clean to an extent difficult to attain before running water was introduced into the home. She must be well dressed to a degree undreamed of before fashionable ready-made garments were placed within her reach.

Taken as a whole, American women (in the cities and on the farms, wives and daughters of the wealthy, business women and working girls) are the best dressed women in the world today. Our stenographers are smarter in appearance than many titled persons in other countries, and our rural women, no longer rustic, not only know to the minute what's being worn, but they wear it.

So much has been done along these lines that it seems as if women should be satisfied. Yet even today there arises a murmur loud and deep from practically every feminine biped. They are crying for the Luther Burbank among manufacturers who shall perfect the "runless stocking," not the present tricky thing which the trembling bride knows may spring a leak at the very altar. In spite of alluring advertisements, none can truthfully claim to have made silk hose absolutely safe for democracy.

Extremes to Be Avoided

The dress itself, however, is far from the whole story. Fashion says "Be slim as a slat," and with what result? Where's to be found the figure mercifully alluded to as matronly? Certainly not on the matron of what we may call the first degree. Scarcely on the grand-matron. Where is grandma herself? She is almost undetectable up to two score years. Indeed, now that the "Bobber Shop" shears off a decade with one snip we might almost make it two score years and 10.

Not unnaturally, as the full battery of modern aids to beauty burst upon our dazzled eyes, we were just a bit intoxicated. Many ran to extremes. Some cheeks wore mandarin orange as proudly as if it were the rose flush of health. Unlimited lip stick made of pretty mouths a gummy rather than a tempting prospect. Eyes darkened like thunder clouds under much mascara.

But the unbridled flood of cosmetics tends to abate. There are still overbright cheeks to be seen, but at least some of the glow comes from a belief in plenty of soap and water and lots of fresh air even indoors. The slender, curveless figure of today depends more upon diet and exercise and less upon stays than did the full busts and 18-inch waists of a former generation.

Are We Growing Mediocre?

General pleasing appearance may be but another indication of the process of "leveling up" that some conservatives deplore. The times, they point out, produce no outstanding figure in literature or art. No Shakespeare emerges from the mass, even though there are far fewer illiterates than of yore.

There may be, as the old folks tell, less dazzling beauties than in their time. Not such glorious Helens of Troy, but, we venture to guess, many more delightfully pretty Maude Mullers.

As the sick man dwells unhappily upon the thought of health, so the ill-dressed woman dwells uneasily upon the thought of her appearance. The general determination always to look one's best is not only pleasing to the eye but actually results in less self-consciousness. Pretty girls simper less than of yore. When a woman knows she has done all that's possible for her looks, she can put them out of mind and become more easy in manner, more interesting, more attractive.

Plastic Surgery

Women, of course, are the main patrons of the professionals who claim to create or restore good looks. Yet, surprising as it seems, it is men who have profited most from the highest branch of the art, that of plastic surgery. The reason for this is to be found in the great war which maimed and disfigured so many thousands of our young manhood.

In the effort to heal the scars of battle, plastic surgery developed much faster than it would have done normally. Delicate operations were performed which would scarcely have been contemplated without the stimulus of war.

A Word of Warning

Here the too enthusiastic seeker after beauty, who longs for improvement in any of the points where nature may have failed, would do well to heed timely warning. We are told that reputable, reliable plastic surgeons are rare. They hesitate to undertake operations designed simply to add to an already fairly satisfactory appearance.

But where the skilled surgeon hesitates, or painstakingly builds up tissue, the unreliable practitioner may inject paraffin and leave the patient to reap a harvest of unavailing regrets. The built-up nose may be lovely to look upon until it begins forlornly to droop. Though the surgery fails, the plasticity persists until the offended feature sags or turns helpless to lie upon the cheek.

Go slow girls. If your nose hooks or tilts a bit too much, just grin and bear it. As for moles, unless you can secure the services of a proved expert, better regard them as once they were called "beauty spots," rather than risk their being converted into dangerous tumors.

Preserving the Strawberry

(*Continued from page* 5)

they may be placed in a sunny window. If placed outdoors, they should be brought in at night. Occasional stirring will hasten the process. The preserves are finished when the berries are plump and the syrup has become almost a jelly. The berries should be large, plump, of exceptional color and aromatic, but rather sweet. The preserves are filled into clean dry jars, filling to within half an inch of the top. The jars are partially sealed and processed in the water bath for five minutes.

Cooked preserves are easily made and will be found very satisfactory. Fruit should be handled in small quantities, not more than two quarts in one cooking where ordinary kitchen equipment must be used.

A syrup is made by dissolving sugar at the rate of three-fourths pound per quart of berries in one-half cup of water. When the syrup reaches the boiling point, add the prepared berries and bring again to the boiling point and boil moderately for two minutes. Handle the hot fruit carefully, as it is easily broken up. When cooled somewhat, the berries and syrup are poured into a shallow granite pan and set in a warm dry room or preferably in the sunshine in a window or on a piazza.

At the end of 24 hours, the pans of fruit and syrup are set on the fire and boiled gently for one to three minutes, depending upon the condition of the syrup. If the syrup is very thin, the longer period will be necessary. The fruit is allowed to stand for another 24 hours. At the end of this period, the syrup should be either very heavy or almost jelly-like and the fruits should be plump and very tender.

The syrup and fruits are packed into suitable sized fruit jars and processed for five minutes in hot water to insure keeping.

Marmalades

Of the many marmalades that are made with strawberries, only two of exceptional quality will be discussed.

Strawberry Rhubarb Marmalade.—This is one of the best combinations from the standpoint of both quality and economy in manufacture. The materials may be combined in any desired proportion, but equal parts by weight are most generally used. To each quart of prepared strawberries, which is just a little more than a pound of rhubarb cut into half inch lengths, one to one and one-fourth pounds of sugar are added.

The berries and rhubarb are cooked with a half cup of water until fairly thick. The sugar is added and the cooking is continued at rapid boiling until the boiling product will round up on a spoon or pour from it in sheets or flakes. Frequent stirring is necessary to prevent burning.

The finished marmalade is cooled and stirred until the scum or froth disappears. It is filled into clean dry jars; fill them full. The jars are partially sealed and processed in the water bath for five minutes.

If it is desired to retain some of the berries whole, about half the sugar is added at the beginning of the cooking period.

Strawberry Pineapple Marmalade.—Those who like the flavor of pineapple will find in a blend of pineapple and strawberries one of the most delicious fruit products made.

The proportion should be about one-fourth to one-third as much pineapple as strawberries by weight, or about a No. 30 pineapple to four or five quarts of strawberries.

The pineapple and berries, together with a half cup of water per quart of fruit, are cooked at moderate boiling until the hot material will heap up on the spoon. The sugar is then added and the cooking is continued with frequent stirring until the hot product again heaps up on the spoon. The finished marmalade is removed from the fire, cooled and stirred until the scum or froth disappears, and then filled into clean jars. The jars are partially sealed and processed in the water bath for five minutes.

Jelly

Jelly may be made from strawberries if they are not too ripe. However, the flavor is too heavy and the consistency is liable to be sticky ro gummy. A much better jelly can be made by combining the strawberry juice with that obtained from green apples.

Near the close of the strawberry season, the earlier varieties of apples are large enough to thin. These small, green apples are sliced and boiled slowly for 15 minutes with water in the proportion of one and one-fourth pints per pound of apples, and the free run juice is taken off through one layer of cheesecloth. The pulps are recooked for 15 minutes in the same amount of water as used for the first cooking. The pressings are mixed with the first extraction and clarified by straining through four layers of cheesecloth. This juice is rich in acid and pectin but carries little flavor.

The juice is extracted from the

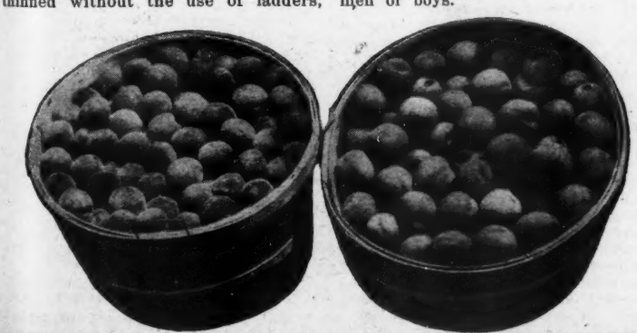
(*Concluded on page* 35)

Thinning the Peach Crop

(*Continued from page* 3)

time, anyway, and it may pay much better to pick a large part of them in May or June while they are small and green than to pick the same peaches in August or September when they are small and ripe.

Trees that have been headed low and pruned to a wide spreading form, are more readily thinned than those that are tall and more upright in growth. On young trees that can be thinned without the use of ladders, the work proceeds very rapidly. An active man can thin an acre of such trees in a day. The work proceeds much more slowly where ladders must be used, but is even more necessary on old trees if the desired results in size and quality of fruit are to be secured. Tall men are desirable workmen for thinning peaches, since they can thin taller trees without the use of ladders or other supports than short men or boys.



Results from unthinned and thinned peach trees. The thinned peaches at the right, though not so well packed, sold for better prices than the unthinned peaches at the left, because of the larger size

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CHATS WITH FRUIT GROWER'S WIFE

By HAZEL BURSELL

Fashion Highlights for Spring

MANY columns have been written in the magazines and newspapers about fashions for women this year. In fact, so much has been said on the subject by so-called authorities (who may or may not agree) that it would be small wonder if many of us become confused—the more we read the less we know. The writer does not claim to be an authority, but she thought a brief summary giving only the highlights of fashion for spring and summer would aid her readers in planning their wardrobe.

Silhouette Important

To begin with, the *silhouette* is the keynote of all fashion. The silhouette is the general outline of the figure in costume, or the impression we would make if we were sketched and if the outlines were inked in solid in black. Last year we had the straight lead-pencil silhouette. This year milady's costume must be snug and trim to the hip line, whence it flares and ripples into a very full, short skirt. The 1926 silhouette, then, is slim above and flared in the skirt, except in the case of the short cape, in which case the flare comes at the waistline and the skirt is straight in effect.

Skirts may be either circular, flared or pleated, just so long as they are full. The length will be governed by the age, height and weight of the wearer. The older woman inclined to stoutness should wear her dresses short enough to look neat, yet long enough to give added height. She will find the fitted-top-flared-skirt type of dress becoming. The young daughter, unless over-weight, may wear any and all types and "wear 'em short." The new bolero and still popular two-piece blouse and skirt dresses are especially suitable for the young girl.

Waistlines, for the most part, are still non-existent. Many dresses have none at all, many others have them just below the hip line, a few have them right at the hip line, and a very few have normal waistlines.

The stout woman should have no belt at all, though one broken by scallops, points or a V-shape might be slenderizing in effect. A wide, decorative belt would be becoming to the tall, too-slender woman.

Sleeves Are Long

Sleeves are very important in this year's costume. All except formal dinner gowns have full length sleeves. These may be either fitted or full, tight at the top and flared below the elbow, or even of the old-fashioned "mutton-leg" type. Plain sleeves are more suitable for the stout person, while her slimmer sister may revel in trimmings and decorations. Braids, buttons and embroidered bands all find their place in sleeve decorations. High collars are popular, but suited only to the lady with slim face and neck. In many cases, scarfs and ribbons are used to give the "high-collar" effect where there is no collar.

Coats may be of silk or wool and either straight or flaring. They must harmonize in color with the dress, hat and accessories. Capes are frequently seen this season. They appear as wraps or as additions on the coat, dress or suit. The cape may be braid trimmed or plain with a gay-colored lining that shows as milady walks. Fur trimming in narrow bands is often used on summer wraps, whether coats or capes. Satin and crepe de chine are used to a great extent for coats this season. This should be good news for home dressmakers, as silk coats are easily made and look very rich at small expense. A very shiny material, such as satin, will tend to make the stout person appear larger than she really is, while the duller crepe de chine would not have this effect. Silk coats should be lined throughout, and trimmed with braid or narrow fur-and-braid bands.

Popular Silks Listed

The popular silk materials are taffeta, satin, flat crepes, crepe de chine, crepe Romaine, bordered and all-over printed crepes, and plain georgettes in black or Navy blue. The most popular printed crepes have gay-colored conventional designs in all-over patterns on dark backgrounds, though the lighter colors will no doubt be more popular later in the summer. Here again, taffeta, satin and the large, conspicuous figured materials are less suitable for the "stout" than the "lean." Printed voiles and cotton and silk mixture crepes come in many lovely colors and patterns, and being very inexpensive, we should be able to afford several dresses of this type. Kasha, flannels and jerseys are the wool materials most often used. Jerseys are not so practical as they stretch badly with much wear.

Strive for Color Harmony

We should strive for complete color harmony in the costume. This does not mean that coats, hats, dresses, etc., must all be of the same color, but it does mean that they should seem to belong together either through contrast or similarity in colors. The wearer should select one foundation color for the season's wardrobe and plan all her garments around that color. For instance, a gray-haired woman would look very well in gray, providing her complexion is clear. She might have a gray coat, a gray and cerise or rose dress, a gray and blue dress, a soft toned blue dress trimmed in bright braid, or, if green is becoming, she might have a green dress with some bright figure or trimming. The hat could be either gray or blue with rose, cerise or blue trim or a combination of them, depending on which color she will trim her dresses in. She might have several inexpensive dresses chosen to harmonize with the hat and coat, yet made of different materials and from different patterns. She would choose black patent leather slippers and gray or taupe hose, preferably gray.

If the tan or new Bois de Rose colors would be more becoming than gray, she might plan her costume around one of these colors, of which there are many shades. Bois de Rose is a soft tan-rose or taupe-rose and is very pretty and becoming to many persons. The coat would be of plain material in the chosen color. Then the dresses and hat would carry out the color scheme either in the background or in the touch of color. The hose and gloves would be a harmonizing tan in color. Either black or tan slippers would be suitable.

Most ordinary folks cannot afford a new coat every summer. Therefore, we should plan to keep the same general color scheme for at least two seasons, varying our clothes in the less expensive items of hats, dresses and hose. Choose a neutral foundation color and add the bright touches in small amounts.

Must Try Out Colors

But, you say, how can I tell whether or not a color is becoming to my hair, eyes and complexion? The answer is "Try it!" Take several good-sized pieces of material in different colors

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before you buy, and stand before a glass in good light, preferably not artificial. Drape them, one after the other, over your shoulders and you will note at once that one brings out the color in your hair, eyes and cheeks while another takes the luster from your hair and makes your complexion appear sallow. Thus, you will find your becoming colors.

There are a few general color rules. Avoid green, orange, purple and red if you are sallow in color. Gray requires a clear skin with good pink color. Green is becoming to clear skinned brunettes, all red-haired women and most blondes. White should almost never be worn by brunettes. Black is almost universally becoming, though it should be relieved with a gay color, a cream neck ruffle, or even a string of pearls. The flaming colors, such as red, orange, cerise, rose and flame are usually becoming to brunettes. Browns, blues, orchid, pinks and white usually look well on blondes. The red-haired miss may wear green, browns, rust, certain shades of orchid, black and white.

Hats for the most part are larger in brim. The woman who looks well in the large hat should come into her own this season. For the small person or the very small-faced person who would look lost in a large hat, there are still a large assortment of clever small hats. The April, 1925, issue of the AMERICAN FRUIT GROWER MAGAZINE contained an article on the choosing of the hat. Readers are referred to this for further suggestions.

Just one more word and then we will have done. It concerns milady's purse. It may be made of soft leather, moire silk or tapestry. The moire silk purse is very popular and can be easily made if you have a good looking purse frame. The purse may be in a neutral color, but the very newest ones are bright green, rose, blue, orange and red. Of course, it should harmonize with the color note chosen for the costume. The silk is shaped and gathered slightly full into the purse frame. Leather purses of one type or another are always practical and good looking. The moire ones would not wear more than one summer, but then, you would not expect them to.

Recipes for Serving Fish

IN THE springtime of the year our thoughts turn to many things—and the one that comes most insistently to the masculine mind is the time-honored pastime of fishing. If Hubby or Son heeds the call and has any luck, he should bring home a nice catch of fish, varying in kind and flavor according to the locality and whether from salt or fresh water. Then, too, the commercial fishing season opens soon. But whether our fish was caught in a lake or stream or bought at the local market, we all enjoy fish occasionally. A few recipes should be a welcome addition to the family cook book. We should keep in mind in preparing a fish dish that all sea foods are delicately flavored and therefore require careful seasoning. There are many tasty, slightly tart fish sauces, all of which are good.

Broiled Trout

Clean trout and wipe dry. Remove heads and tails if desired. If extra large, split the fish lengthwise down the back. Sprinkle with salt and pepper and dredge with flour. Place in well-greased hot broiling pan, flesh side down if split. Broil on flesh side till cooked, loosen carefully, turn and fry on skin side just long enough to make skin brown and crisp.

Boiled Salmon

Salmon should be "scaled," cleaned and wiped, then cut in thick slices for boiling. Tie in a piece of cheesecloth to prevent scum from being deposited on the fish. Cook in boiling salted water until flesh leaves the bone easily, the time varying according to the size of the pieces. When cooked, drain and serve with egg sauce or hollandaise sauce, or serve plain garnished with lemon and parsley. Halibut or cod is boiled in the same way, except that some lemon juice is added to the boiling water to keep the fish white. A recipe for egg sauce was given in the April issue.

Hollandaise Sauce

½ c. butter	¼ t. salt
Yolks 2 eggs	Cayenne
1 T. lemon juice	⅓ c. hot water

Put butter in bowl and wash in water. Divide in three pieces and put one piece in saucepan with yolks of eggs and lemon juice. Place pan over boiling water and stir constantly until butter melts. Add second piece of butter and, as mixture thickens, third piece. Add boiling water, cook one minute, and season. If mixture curdles, add 2 T. heavy cream or 2 T. boiling water. Serve hot.

German Boiled Salmon

Prepare salmon as for boiling. Place in boiling salted water to which has been added one pepper corn, three small onions and a bay leaf. Cook until done, remove fish and strain the liquor. Place 2 T. butter in small pan and brown. Add 3 or 4 T. prepared mustard and blend with butter. Then stir liquor into mustard mixture and cook, stirring constantly until it thickens. Serve over the fish or separate in gravy boat.

Baked Halibut with Tomato Sauce

2 lbs. halibut or salmon	3 cloves
2 c. tomatoes	½ T. sugar
1 c. water	3 T. butter
1 slice onion	3 T. flour
	¾ t. salt
	Pepper

Cook together 20 minutes tomatoes, water, onion, cloves and sugar. Melt butter, add flour and stir into hot mixture. Add salt and pepper, cook 10 minutes and strain. Clean fish and put in baking pan with sauce poured around it. Bake 35 minutes, basting often. Remove to hot platter, pour around remaining sauce and garnish with parsley. For a whole large fish, increase the amount of sauce greatly and lengthen the time of cooking.

Baked Fish with Stuffing

Clean a 4 or 5-pound fish, salmon, halibut or haddock, sprinkle with salt inside and out, stuff and sew. Cut five gashes on each side of backbone, having gashes on one side between gashes on other, and insert narrow strips of fat salt pork. Shape with skewers in form of letter "S" and fasten skewers with long twine. Place on greased fish-sheet in dripping pan, sprinkle with salt and pepper, brush with melted butter, dredge with flour, and place small bits of fat salt pork around the fish. Bake in hot oven, basting as soon as fat is fried out and continue to baste every 10 minutes. Serve with egg or hollandaise sauce. Garnish with parsley and lemon slices.

Fish Stuffing

1 c. cracker crumbs	1 t. each of parsley,
¼ c. melted butter	capers and chopped
¼ t. salt	pickles
⅛ t. pepper	Onion juice

Mix ingredients in order given. This makes a dry, crumbly dressing. Add ¼ c. hot water if a moist dressing is desired.

To Fillet Fish

Clean, skin and bone either halibut or flounder. A piece of fish, large or small, freed from the bones, is known as a fillet. For halibut the slices will be about three-quarters inch in thickness. When flounder is cut in fillets, it is served as Fillet of Sole. To cook, salt the fillets, roll in flour or corn meal and fry until nicely browned, using plenty of fat in the pan. Serve with tartare sauce or garnish with lemon rings.

Baked Bluefish

Split and bone a bluefish, place on a well-buttered sheet and cook 20 minutes in a hot oven. Cream ¼ c. of butter, add yolks of 2 eggs, and when well mixed, add 2 T. each of onion, capers, pickles and parsley, finely chopped, 2 T. lemon juice, 1 T. vinegar, ½ t. salt and ½ t. paprika. Sprinkle fish with salt, spread with mixture and continue the baking until fish is done. Remove to serving dish and garnish with potato balls, cucumber strips, slices of tomatoes, lemon cut in fancy shapes and parsley.

Baked Sturgeon

Procure 3 or 4 pounds from the thick part of the sturgeon and put in boiling salted water. Let boil for 5 minutes and then allow to simmer for 2 hours. From time to time skim off the fat. Drain, make deep cuts in the flesh, and fill with a good fish stuffing moistened with tomato juice instead of water. Pack stuffing into incisions in the fish. Dredge all over with flour to which has been added salt and pepper, and bake 45 minutes in a hot oven, basting every 15 minutes with hot water. Sturgeon is a red-fleshed fish, very rich in fat.

Salmon Souffle

1 can salmon	½ c. bread crumbs
¼ t. salt	½ c. milk
¼ t. paprika	Yolks of 3 eggs
2 t. lemon juice	Whites of 3 eggs

Remove bones and skin from salmon, separate into flakes and add seasonings. Cook bread crumbs in milk 5 minutes, add salmon and the egg yolks beaten until thick and lemon-colored; then cut and fold in whites of eggs, beaten until stiff and dry. Turn into buttered baking dish, set in pan of hot water and bake in moderate oven until firm. Serve with a tomato sauce.

Table of Equivalents

1 t. means 1 teaspoonful.
1 T. means 1 tablespoonful.
1 c. means 1 cup (½ pint).
1 pt. means 1 pint.
1 lb. means 1 pound.
All measures level.

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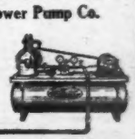

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Bee Keeping for Fruit Growers

By H. F. Wilson

Bigger Crops Secured by Proper Supering

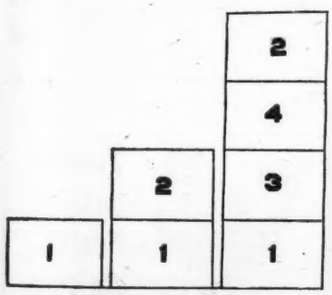
THE AVERAGE surplus crop of honey secured by beekeepers in the United States is estimated at from 13 to 15 pounds per colony. This is a very small average, and it does not pay any beekeeper to keep bees when he cannot secure a larger average than this.

Supering bees to secure a maximum crop is a very simple matter if properly attended to. Different methods must be used for different localities. However, the general principles are the same in all localities. One of the principal reasons why the average beekeeper does not secure a large surplus crop is because he does not have the bees when the honey flow begins.

In order to insure a sufficiency of bees, as we have explained in previous articles, plenty of room and stores must be available during the brood rearing period, which comes before the honey flow. Therefore, as soon as a colony is set out in the spring, it should have more than enough stores for brood rearing at all times. When a colony has six frames or more containing some brood, a second hive body should be added as a second section to the brood chamber.

Supply Honey If Nectar Is Not Available

If the bees are able to gather nectar in the field, it is unnecessary to do anything more at that time. However, if nectar is not available, then stores of honey or sugar syrup should be given to them. In most cases, two



Supering for the honey flow

The above diagram represents the brood rearing and storing space which a colony of bees should have during the spring period and at the beginning of the honey flow.

Section No. 1 in the drawing represents the original brood chamber. Section No. 2 is the second part of the brood chamber to be added when the colony has brood in at least six frames; this will normally be about May 1. Sections 3 and 4 represent two extracting supers to be added between sections 1 and 2 at the beginning of the honey flow.

10-frame hive bodies will be sufficient for brood rearing, but an occasional colony may need three.

This large brood chamber will also be of great benefit in preventing swarming. Just as the honey flow is beginning, the frames containing mostly sealed brood should be shifted into the second section of the brood chamber, and the combs containing mostly unsealed brood should be put in the lower hive body. When this is done, put a queen excluder on the first, or lower, hive body. Place two extracting supers on top with full sheets of foundation, or drawn combs, and above these place section No. 2 of the brood chamber. At the time when the combs containing the sealed brood are transferred to the upper section of the brood chamber, all queen cells should be removed, and seven days after this manipulation go through the upper section and again cut out any queen cells which may have been started.

Extra Room Will Reduce Tendency to Swarm

The bees now have an abundance of room to store surplus at the beginning of the honey flow, and this extra room will also to some extent reduce the tendency of the colony to swarm. The upper section of the brood chamber, or No. 2 in the accompanying illustration, should be filled with honey in about 21 days, and it can then be removed and set aside for fall and winter feeding, while the surplus honey should be considered only that which is gathered in the two extracting supers.

If the honey flow is rapid and the two extracting supers are filled quickly, then a third super should be added between sections one and three. Super No. 4 can be removed when it is completely filled and the combs fully sealed over. Additional supers should always be placed next to the brood chamber under those that are partly filled. If a sufficient number of supers is always kept on the hive so that the bees have storing room, a maximum crop for any colony during any season will always be secured.

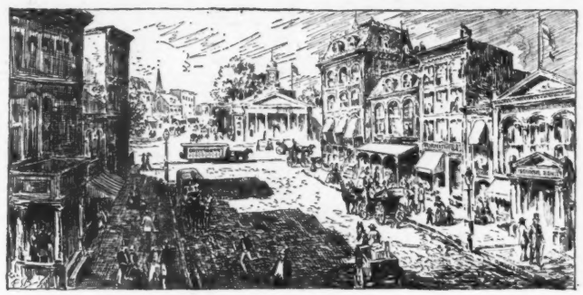
Control Wax Moth in Beehives

THE BEESWAX MOTH is more or less of a problem in nearly all sections of the United States. In the warmer and drier climate it is frequently a very serious problem, and even the best of beekeepers find it difficult to prevent losses.

There is a belief among many of our beekeepers that the beeswax moth destroys the bees in the colony. This, however, is not the case. The beeswax moth larva which does the damage, does not normally feed on any other substance than the combs, and is unable to make headway in strong colonies. The larvae inside hives containing bees indicate that those colonies are too weak to cover all the combs, and the beeswax moth lays her eggs on the outer combs. The larvae, hatching here, work on these combs at the start and gradually work in toward the center combs. If the bees are located on one side of the hive, the beeswax moth larvae may work in the center combs at the start. The only prevention is to keep the colonies strong.

In the case of stored combs, these must be kept in a screened room where the moth cannot gain entrance. Beeswax moth larvae in the combs can be destroyed by fumigating with paradichlorobenzene or carbon bisulphide. If the first material can be secured, it is the more desirable, as it is uninflammable. The carbon bisulphide can normally be secured at most drug stores, and is effective except at temperatures of below 60 degrees Fahrenheit.

Use one ounce of material to four hive bodies, one stacked above the other. See that the lower hive body sets evenly on the floor so that the gas cannot readily escape; then pour the liquid in on top of the combs and place a tight cover on the top.



The Telephone and Better Living

PICTURES of pre-telephonic times seem quaint today. In the streets were horses and mud-splashed buggies, but no automobiles and no smooth pavements.

Fifty years ago homes were heated by stoves and lighted by gas or kerosene lamps. There was no domestic steam heating or electric lighting, nor were there electric motors in the homes. Not only were there no telephones, but there were no phonographs, no radio and no motion pictures.

The telephone permitted the separation of business office from factory and made possible the effective co-ordination of widespread activities by a centralized organization. It changed the business habits of the Nation.

The amazing growth of the country in the past fifty years could not have come had not science and invention supplied the farmer, manufacturer, business man and family with many new inventions, great and small, for saving time and labor. During this period of marvelous industrial progress, the telephone had its part. It has established its own usefulness and greatly accelerated the development of the industrial arts which have contributed so much to better living conditions and to the advancement of civilization.

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Front view

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You can now cultivate your orchard close to the trees without damage to the low-hanging branches.

For the Clark "Cutaway" Tractor Orchard Plow, built especially for this kind of work, is equipped with a galvanized sheet iron guard, **curved** to gently lift the branches over the machine without injury.

And because it can be worked close to the trees it quickly levels and pulverizes the ridges that have been built up through years of plowing.

The picture shows the disks pulling the soil away from the trees, but the gangs can be reversed to throw it toward the trees.

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The Clark "Cutaway" Tractor Orchard Plow is ideal for breaking old hard sod. And as it will disk in a cover crop without requiring harrowing afterwards it saves time, labor and money. The disks are **forged sharp**—an exclusive Cutaway Harrow feature which prevents cracking, bending or chipping.

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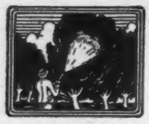
Rear view



A Safe Summer Spray

Spray in the summer for San Jose scale. You can do it with Volck, a new type of oil spray which not only gives highly effective control, but can be applied any time of year without the old burning hazard of fruit and foliage. It has been extensively used in the famous Wenatchee and Yakima Valleys of Washington, where it has not only cleaned up scale and codlin moth, but has saved many thousands of dollars worth of apples that would otherwise have been unmarketable.

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Volck not only cleans up the trees, but cleans up the fruit. The scale is killed, the red spots disappear, and you get smooth, clean, fancy apples, the kind that enjoy the best markets and bring the top price.

Methods of citrus insect pest control in Southern California and Florida have been revolutionized by the use of Volck. Thousands of acres are now sprayed regularly with this material and even the so-called resistant scales, once considered immune to efforts at control, have been completely conquered.

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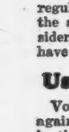

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Engineering for the Fruit Grower

By E. W. Lehmann

Cutting Costs of Production

THE TWO most important factors that determine the cost of farm production are man labor and power. According to farm management specialists, these two items, along with machinery, which is small in comparison with the other two, make up from 60 to 80 per cent of the operating costs of crop production.

Increased efficiency and low cost of production will depend to a large extent on the kind of machinery available. On a well organized farm with adequate machinery the number of hours of labor required to produce an acre of crops can be reduced to a minimum. Records show that there is a wide variation in the amount of man labor required on different farms to produce an acre of crops. For example, the man hours required to produce an acre of corn in the United States varies all the way from three man hours per acre to 300 man hours per acre. These are extremes, but they point to a factor in production that every farmer should study.

A statement made by the rural economists at the Ohio State University gives an example of reducing the labor costs in producing corn as shown by records kept by Greene and Medina county farmers in that state.

It is pointed out that the labor costs were 53 per cent of the total cost of planting corn. The report states: "The labor cost is even more than the combined cost of commercial fertilizer, manure, seed, equipment or machinery charges, taxes and interest on the land.

"By having fields of more than 20 acres instead of less than 10, a farmer can cut off in one slice 34 per cent of his man and horse labor cost, or 18 per cent of the cost of producing corn.

"In fields averaging 30 acres, according to the records, the plowman turned under eight and a quarter acres in the time required to plow five acres in a six-acre field. When three horses and the same sized plow were used in both the large and small fields, plowmen gained a half acre a day in fields of 20 acres or more.

"In larger fields larger units of machinery and teams can be used to better advantage. By using three horses and a two-row cultivator, the owners of big fields cultivated about 90 per cent more corn in a day than those who used two horses and a one-row cultivator."

Labor is an important factor in fruit production as well as in the production of corn. In a recent bulletin published by the Minnesota Experiment Station on the cost of producing apples in Minnesota, it is shown that picking requires the largest item of labor, and that pruning, spraying and sorting follow in order of importance. It is pointed out in the conclusions that inefficient spraying has been the cause of much of the poor condition of the crop. Proper spraying is recognized by all fruit growers as a fundamental orchard practice. Inadequate equipment naturally results in inefficient use of labor and a waste of spraying materials. This is extremely costly to the fruit grower because it also results in a poor quality of fruit.

Keeping the Basement Dry

THE COMFORT and the health of the family are dependent on proper sanitary conditions. A damp or wet basement tends to promote conditions that are not sanitary. If your basement is continually damp, some steps should be taken to keep it dry.

Most damp or wet basements are due to poor drainage or excessive shade trees. The damp condition may also be due to poor ventilation. The custom of banking up farm houses and sealing up the windows for winter usually results in a damp, musty basement or cellar; this can be remedied by ventilation.

When dampness is due to seepage, the first step in making a basement dry is to remove the cause by adequate drainage. To do this, an outlet is necessary. Place the drain around the foundation wall just above the bottom of the footing and a little below the floor level. Use either a four or five-inch drain tile for this purpose. With a good outlet, the seepage will be drained away and dampness in the basement will be eliminated.

To waterproof new walls, apply a hot pitch or waterproofing compound on the outside. This will seal the pores and cracks and prevent the seepage of water through the walls. If the foundation is of concrete, a cement wash, if carefully applied immediately on removing the forms, will be effective in checking the passage of moisture through the wall.

Old walls are sometimes waterproofed by applying a coat of hot waterproofing material, or pitch, on the inside and then plastering with cement plaster. The surface must be dry when the waterproofing is applied. If the location of the house is such that outside water cannot be removed by drainage, then about the only remedy is to apply a waterproof coating as outlined above, also a layer of waterproofed paper. To prevent its peeling off, construct an inner wall of concrete about four inches thick. This will give a double wall with a layer of paper between through which water will not pass. If seepage comes up through the floor, it can be stopped in the same manner.

Inspecting the Drains

DURING the spring growing season is a good time to inspect the drains. By all means see that the tile outlets are clear and flowing freely. An obstruction along the tile or at the outlet will result in a wet spot in the field.

A broken tile will usually cause the tile line to fill up. This sort of an obstruction is usually noted by a wet spot above the point caused by the water flowing through the tile and seeping out at that point. Such a condition can be easily remedied by digging out the broken tile and putting a good one in its place.

Tile outlets are often stopped up due to lack of protection. Tile that come to the surface without a bulk head or some other form of protection are liable to be broken or knocked out of place. Such tile and outlets are sometimes damaged by freezing and thawing. This can be avoided by installing a few lengths of sewer tile at the outlet. In other cases, they are broken by stock or rooted out of place by hogs. Some form of protection is the obvious remedy.

Open ditches also need attention at times. If neglected, they are liable to be filled with trash, and grow up with willows and other brush. Often open ditches are constructed originally at great expense and then neglected because of little value as outlets. A certain amount of maintenance is needed for every drainage system if it is to be kept in good working order.

Power Washers Are Labor Savers

FROM two to three hours of time can be saved each week by washing the clothes with a power washing machine instead of doing the job with hand operated equipment. A power washer is not only a time saver, but it makes a hard, disagreeable task easy. The cost of operating a washing machine is so little that it is al-

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THE wise orchardist of today depends as much on his cider production for profits as upon his grade A fruit. Cider—pure, sweet and sparkling—is now in great and growing demand, and offers the sure way to a PROFIT-MARKET for undergrade apples.

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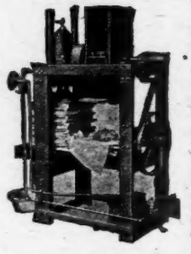

Have led the field in cider making for more than fifty years. Ruggedly built for years of dependable service, they press the greatest possible amount of juice from your fruit and assure you thoroughly efficient, trouble-free operation—always. They range in capacity from 80 bushels of apples per day to the largest custom sizes that press 1,500 bushels per day, and include roadside, orchard and custom presses.

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The most complete line of machinery for fruit products plants, including cider presses for every need.

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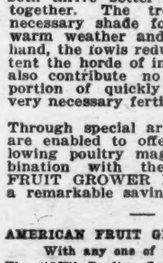
Beautiful Catalog entitled, **"The Art of Poultry Raising," Free. 20 Bes. Varieties.** 68 birds won 28 ribbons in 1925. Buy Winning, Heavy Laying, Profit Paying **"Geneva"** Chicks for 1926. Bred, hatched and shipped under our personal care and supervision. Write today for our **new low prices.** Postpaid. Full Delivery Guaranteed. Reference—**Bank of Geneva.** Mem. I.B.C.A.

THE GENEVA HATCHERIES, Box 38. Geneva, Ind.



Poultry and Fruit Go Hand in Hand

—and the reason is not hard to find, both thrive better when they are together. The trees afford the necessary shade for the fowls in warm weather and, on the other hand, the fowls reduce to some extent the horde of insect pests, and also contribute no inconsiderable portion of quickly available and very necessary fertilizer.

Through special arrangements we are enabled to offer you the following poultry magazine in combination with the AMERICAN FRUIT GROWER MAGAZINE at a remarkable saving to you.

AMERICAN FRUIT GROWER (2 yrs.)
With any one of the following:

The "OK" Poultry Journal	1 yr.	$ .85
Everybodys Poultry Magazine	1 yr.	1.00
Modern Poultry Breeder	1 yr.	1.00
Poultry Success	1 yr.	1.00
The Pacific Poultryman	1 yr.	1.00
The Poultry Item	1 yr.	1.00
Northwest Poultry Journal	1 yr.	1.25

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most negligible. Less than five cents' worth of electricity is used in doing a week's washing. The cost of operating a small gasoline engine for driving a washing machine would be no more than this.

In order to get the men to appreciate the importance of the job of washing, let the hired man do it for a month, or better yet, let the good husband do it for a few weeks. If adequate equipment is not available and the men do not favor doing the washing, try sending the clothes to the laundry. The job of washing will be recognized as one of considerable economic importance if a laundry bill has to be paid for a few months. There are few other machines bought for either the home or the farm that pay for themselves as quickly as a washing machine.

Babbitting a Solid Bearing

OFTEN a bearing becomes badly worn and when no means of adjustment is provided, it is necessary to babbit it. The first step is to chip or melt out all of the old babbitt and clean out the small retaining holes. Next clean the shaft and wrap one thickness of writing paper about it just the length of the bearing and fasten it by winding twine about it in a spiral shape. The purpose of the paper is to prevent the bearing from becoming too tight, and the twine will form oil grooves. The shaft is then placed in line in the bearing and the ends closed up by placing heavy cardboard over the shaft at each end and stopping the holes with soft clay. Ordinarily the babbitt is poured through the oil hole. However, it can be poured through an opening provided at one end.

Before pouring, always warm the box to prevent the babbitt from cooling too rapidly; this may be done by placing a hot iron against it.

Procure a suitable ladle for heating the babbitt. To test the babbitt for proper temperature, use a small stick; the babbitt should be hot enough to char the stick before it is poured. It is well to provide a few vent holes through the end protection with a wire. This is to allow air and steam to escape when the hot metal is poured in. Remove the end protections, the plug that fills the oil hole and the shaft after the babbitt has set but before it is cooled entirely. Wipe out the charred paper and twine, see that the oil hole is thoroughly cleaned out, replace the shaft and see that it is true and turns freely. The bearing should be ready for use as soon as it is cool.

Building Plans

IT IS a relatively easy matter for the farmer to secure plans that are helpful in working out the details of a new home, a new barn, a minor building or of special equipment such as self feeders, etc., that are needed on the farm. Nearly every state agricultural college and also the federal department have a farm building blue print service. These agencies are in position to furnish stock plans that are suggestive. Most of the states providing this service make a charge of about 10 cents a sheet for the blue prints; in some cases a plan is made up of several sheets.

With this service available, there is little excuse for poorly planned buildings which result in waste of time and poor economy in construction. Lists of plans may be secured from a number of the agricultural experiment stations on request. If you have a building problem, write to your station for advice and a list of plans available.

Preserving the Strawberry

(*Continued from page 29*)

strawberries by adding one cup of water to each quart of berries and is then boiled slowly for five minutes. The pulps are recooked for 10 minutes with twice as much water as used for the first cooking. Both the free run juice and that obtained by pressing the pulps are mixed with the first extraction, and the mixture is strained through four layers of cheesecloth.

The best combination is to use equal parts of strawberry and apple juice with sugar in the proportion of one pound per quart of mixed juices. A good jelly may be made by using two parts of apple to one part of strawberry juice.

The mixed juices are boiled rapidly until the volume has been reduced about one half. The sugar is then added, and the boiling is continued as rapidly as possible until a jelly test of the last of the boiling syrup poured from a spoon forms a sheet along the lower edge. The spoon should be hot when making this test.

The finished jelly is strained through a single layer of good cheesecloth into a lipped vessel and is quickly filled into clean dry glasses, filling to within one-quarter inch of the top. If the surface is covered with a scum of froth or bubbles, it may be easily and quickly removed after the glasses have cooled for a few minutes. When the jelly has set, it is covered with a thin layer of hot paraffin. The covers are applied, and the jelly is ready to be stored in a dry place of fairly uniform temperature.

If jelly glasses are not filled too full, they will not "weep." A space of one-eighth inch between the top of the glass and the surface of the paraffin should eliminate this trouble. Jellies with high acid content often tend to revert to a syrup, but with this space above the paraffin, it will remain in the glasses rather than flow down the side of them, giving an untidy appearance to the jelly closet.

In any of the above products, the proportions of fruit or the proportion of sugar may be changed to suit the individual or family taste. The proportions given have been found reasonably satisfactory to hundreds of housewives and others who have tried them.

A definite mileage Guarantee Backed by a 54 year old Company

If you *could* buy a better tire value, if you *could* get extra quality for an extra price—that would be a different thing.

But when we put a 54 year old guarantee back of Riverside tires, when we guarantee them to give you the last possible yard of mileage, paying an extra price is only extravagance.

When we guarantee our oversize cords for 12,000 miles—our balloons for 10,000 miles—made with new live rubber, designed to prevent skidding—what better tire value can you get at a higher price?

If you pay one-third more, what do you get for the extra money? You get no longer mileage, no better service, no better guarantee of satisfaction. So why pay more?

Why Ward's Prices are Low

We are the largest retailers of tires in the world. We buy our own live rubber, millions of dollars' worth, and pay cash—when rubber is low in price.

Riversides are made in our own molds, under our own supervision. We see that super-quality is built into the tire. And yet our one-profit method of selling by mail saves you a full one-third, that otherwise would go as profit and cost of selling.

Our Auto Supply book is free—Write for it.

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To figure the cost of your copy, count each initial, abbreviation, number or group of numbers, as one word as well as the name and address, thus: "J. B. Jones, 44 East Main St., Mt. Morris, N. Y.," counts as eleven (11) words. Write advertisement on separate sheet. Please enclose cash with order. For advertisements addressed in care of this publication, allow 5 words for address.

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AGENTS—WRITE FOR FREE SAMPLES. SELL Madison "Better-Made" Shirts for large manufacturer direct to wearer. No capital or experience required. Many earn $100 weekly and bonus. Madison Shirts, 564 Broadway, New York.

AGENTS—100 PER CENT PROFIT; WONDERful little article. Something new; sells like wildfire. Carry in pocket. Write at once for free sample offer. Albert Mills, Mgr., 6011 American Bldg., Cincinnati, O.

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AGENTS—OUR NEW HOUSEHOLD CLEANING device washes and dries windows. Sweeps, cleans walls, scrubs, mops, costs less than brooms. Over half profit. Write Harper Brush Works, 292 3rd St., Fairfield, Iowa.

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FOR SALE—APPLE ORCHARD—MESA, IDAHO. Two 10-acre tracts (adjoining), trees bearing 6 years. Jonathans, Grimes Golden, Ganos, Permains, Rome Beauties. Packing house and equipment. Standard Cutler grader, sheds, shack, electric light, ¼ mi. N and S highway. Gasoline sprayer, team, truck, outfit up-to-date. Ready to step into and operate. Orchard packed out 7500 boxes last fall. Reason for sale—death of owner. Widow offers for $10,000, this being one-half cost of purchase and improvements. Address Mrs. H. Kimmet, 6942 Hilldale Ave., Chicago.

OWING TO ILLNESS MUST DISPOSE OF WELLestablished mail order retail supply business netting $5000. Suitable for one having knowledge of fruit growing and its supplies. Address Box 449, Northampton, Mass.

CHICKS

QUALITY CHICKS. STATE ACCREDITED. PER 100: Leghorns, $11; Rocks, Reds, Anconas, $13; Orpingtons, Wyandottes, $14; Lt. Brahmas, $18; assorted, $8; large assorted, $10. Live delivery, postpaid. Catalog. Missouri Poultry Farms, Columbia, Missouri.

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TOBACCO KENTUCKY SWEET LEAF GUARANteed mellow with age. Smoking, 15 lbs., $2.00; chewing, $2.50. Pay when received. Ernest Choate, Wingo, Kentucky.

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WANTED—TO HEAR FROM OWNER OF LAND for sale. O. Hawley, Baldwin, Wis.

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CALIFORNIA POULTRY AND FRUIT RAISING —If you are interested now, or at some time in the future, in owning a profitable poultry farm, or fruit and poultry farm combined, in southern California, send for a copy of our booklet, "How to Go in the Chicken Business and How to Stay In." California Hotel Farm Company, 18 North Euclid Ave., Pasadena, California.

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VIGOROUS NEW LAND STRAWBERRY plants, famous varieties, guaranteed; 50 Dunlap (early), 50 Gibson (midseason), $1; 50 Gibson, 50 Burrill (new), 25 Cooper (big), 25 Eaton (late), 2 Mastodon (new giant everbearing), $2. Postpaid. Keith Bros. Nursery, Box B-3, Sawyer, Mich.

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Nearly every reader of this publication has something to sell which other fruit growers need. Here is the place to make that fact known. Many subscribers are already making profitable use of this department. List what you have for sale or need and find a ready market.

Classified advertisements in The American Fruit Grower Magazine, using no illustrations or display type, cost 15 cents a word each insertion, no advertisement of less than ten (10) words accepted, making the minimum charge $1.50. Cash must accompany order, copy must reach us by the 10th of the month for following month's issue. Address

Advertising Department

American Fruit Grower Magazine, Monadnock Bldg., Chicago

Propagation of Fruit Plants

(*Continued from page 8*)

strated by a number of the experiment stations. It has recently been demonstrated under two successive tests at the Agricultural Experiment Station in Minnesota. The fact that a northern variety has been grown for a year or two years in a southern location does not necessarily reduce the inherent hardiness of the variety concerned.

The above statement does not by any means indicate that there are no advantages in buying trees from nearby nurseries; in fact, the conditions are usually quite the contrary. As an illustration of this point, let us consider the practical situation which confronts a northern fruit grower who is desirous of purchasing plum stock. He may find that plums purchased from a southern nursery are grown upon peach roots, and if he is in the colder regions of the North, he will lose his trees from winter injury to these tender roots. If this fruit grower were living in Minnesota, or a similar region, and desired to purchase apple trees, he would be very apt to secure from a southern nursery trees which have been propagated by budding. There would be no objection to this method of propagation provided the rootstock was perfectly hardy, but such stock at the present time is grown largely from so-called French crab seed and much of it is not hardy enough to withstand the severe winters of Minnesota. If the same grower could buy piece root grafted trees, or better yet, a piece root graft made up with a long scion and short root, he would be fairly well protected, because the seedling root of unknown hardiness would be buried well below the surface of the ground and would receive adequate protection. Furthermore, in a few years scion roots from the hardy scion would become established, giving him a tree growing on its own roots. It is a fact that various regions of America require fruits especially adapted to their conditions. Since this is true, nurserymen living within these regions make a practice of propagating suitable varieties and in propagating these on satisfactory rootstocks, using methods which are best suited to the existing conditions. For these reasons, if for no other, it is generally to a fruit grower's advantage to purchase his stock from nurserymen within his general region. The argument frequently advanced by nursery salesmen that their stock is hardier merely because it is grown in the North is not a good argument and is not true for trees similarly propagated and similarly handled.

Pedigreed Nursery Stock

The word "pedigreed," as used in its ordinary sense, refers to a line of ancestry that has been developed through a process of systematic animal breeding. When this word was stolen from the animal breeders and applied to nursery stock, it ceased to have this meaning. The old saying that "blood will tell" gave the pedigree great value to the animal breeder. To the grower of nursery stock and to the fruit grower it does not have this value. We have pointed out that Rhode Island Greening has existed for nearly 200 years unchanged and unchanging. The original seedling tree of the Rhode Island had the same characteristics, the same kind of fruit and, in short, was the same kind of a tree as are the plants of this variety growing in the New York nursery at the present time. A pedigreed tree of this variety would mean only that it is a Rhode Island tree, the buds from which it has been propagated possibly having been selected from a certain individual tree which seemed to be a little superior to others of the same variety. This superiority can generally be traced to the influence of the seedling root upon which that particular tree was propagated or to certain favorable soil conditions under which it is being grown. It is quite probable that the effect of the seedling root is greater than we have been

(*Concluded on page 38*)

200 RATS KILLED
AT ONE BAITING — NOT A POISON

H. Stenfert of Route 10, Detroit, Mich., says: "I was over-run with rats—seemed to be several hundred of them. Dog, ferret, traps and poison failed. Tried Imperial rat killer and was rid of them all in short order. Found rat skeletons all over the farm."

Mr. Stenfert's experience is typical of thousands of users of this new method of killing brown rats, mice, gophers and other rodents. Greedily eaten on bait. Harmless to humans, poultry, pets, stock, etc. Gives the pests a fever, and they die outside hunting air and water.

So confident are the distributors that Imperial Killer will do as well for you, that they offer to send two regular, full size $1.00 bottles for only one dollar, on 10-Days' Free Trial.

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For Immediate Acceptance Only

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McCall's Magazine	1 Yr.		
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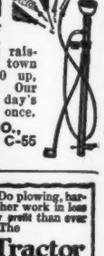

to sell our Comet Auto Washer and Tree Sprayer to farmers, fruit growers, poultry and stock raisers. Every country and small town auto owner buys. Retails $6.50 up, does work of $100.00 equipment. Our men average $10.00 for each day's work. Get free particulars at once.

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Manufacturers for 35 years.

Make this year's farm work easy! Do plowing, harrowing, planting, cultivating and other work in less time, with less labor and with bigger profit than ever before. Costs 15c an hour to run. The

Centaur Farm Tractor

has an implement attachment for every job on the farm. Does all belt and draw bar work. Write for booklet and low price TODAY. Address

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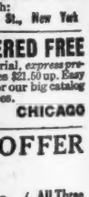

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Crowley's Ridge — New Arkansas Peach Belt

(Continued from page 8)

Never has the orchard netted less than $100 per acre, and the largest return was obtained in its twenty-fifth year, $650 net per acre! The average yearly net income per acre for each of the 23 crops is slightly over $250. This has been on a basis of $1 to $2 peaches, depending on the grade and prices f. o. b. Wynne.

One Crop Failure in 24 Years

In 1918, when a severe winter was experienced, the peaches were killed. This is the only crop on record that was ever winterkilled, and so far as known, a crop has never been killed by spring frosts or freezes in this section.

R. T. (Bob) Simmons now owns the above orchard, which was planted by his father. From the beginning, he has taken a keen interest in his orchard, and particularly so for the past eight or nine years. Mr. Simmons, or Bob, as his friends affectionately call him, is full of energy, a quick thinker, an inventer, and in his orchard work he has carried out some ideas of his own that have proven practical. He has practiced a constant renewal system with his peach trees which has produced ample new wood without ever losing a crop of peaches. While this article deals with a peach development as it now stands, it is well to mention that Mr. Simmons has 20 acres of apples, six acres of Keiffer pears (six miles from the apple orchard), a vineyard, and plantings of a number of small fruits, and he raises cotton, corn and hay, to say nothing of a thousand or so bushels of sweet potatoes.

Industry Promoted by John T. Stinson of M. P. R. R.

Now to get back to our story, Mr. Simmons' activities came to the attention of John T. Stinson, Director of the Agricultural Development Department of the Missouri Pacific Railway. Mr. Stinson obtained the past history of the peach orchard and studied the conditions for several more years. Then he began to dream of Crowley's Ridge as a new peach belt and finally set the machinery in motion which is destined to make a reality of this dream. Meetings were called in each of the eight counties which Crowley Ridge traverses, and bankers, business men and farmers all became enthusiastic over the possibility of developing the ridge into a peach belt. This was largely due to the fact that Mr. Simmons attended all these meetings and related his orchard experiences, and also to the fact that Mr. Stinson pledged the service of the Missouri Pacific Railway in furthering the development.

The Crowley Ridge Development Association was formed, with all eight of the ridge counties participating. R. T. Simmons was elected president, and two directors were elected in each county to serve as an executive committee. Each county pledged to pay $500 per year for a three-year period for the purpose of hiring an expert orchard man whose duty it would be to visit growers in each of the counties and help them make a success of their orchards. This organization took place in the late fall of 1923. In January, 1924, Roy Callison was in the field as association horticulturist. By February a co-operative order was placed for 80,000 Elberta trees. The Missouri Pacific furnished several men to help the new growers get started right with their planting. In the spring of 1925, 125,000 more Elbertas were set, and this spring still another 100,000, bringing the total planted in the two-year period to 305,000, or nearly 3400 acres, 90 trees to the acre being the plan of planting used.

Full Time Horticulturist Employed

Development is taking place at such a rapid rate that the Missouri Pacific Railroad has placed a full time horticulturist in the Crowley Ridge territory with headquarters at Wynne, Ark., to assist the association in the matter of instructing the new growers in proper methods. Mr. Callison, association horticulturist, is paid by the business men of the eight counties. The growers do not have to pay for anything but trees and the necessary equipment and materials to properly care for them. Due to careful supervision, at least 90 per cent of the young orchards are in A-1 condition, and due to this fact and the natural ability of the ridge soil to stimulate early maturity, rapid growth and heavy crops, the trees which are now two years old will bear this summer one-half to one bushel per tree. That this is possible may be realized by looking at the accompanying picture, which was taken when the orchard was only 17 months old. Nitrate of soda is used in all orchards.

Modern Methods Being Employed

All state and out of state horticulturists who have visited this section have been deeply impressed with the possibilities here and the manner in which the development is being handled. No stone is being left unturned to give the growers the opportunity to learn correct methods, and they are responding wonderfully. In December last a $10,000 carload of power sprayers was distributed. Special peach instruction trains are run. Meetings are held at the county seats. The growers are visited personally at least every two months, and will be visited oftener now that there are two men in the field.

Surely Crowley's Ridge is coming into its own as a peach belt, and as the peach development takes care of itself, projects in Campbell's Early grapes, Red Delicious and Virginia Winesap apples will be launched, as Mr. Simmons' orchard and vineyard have clearly demonstrated the superior quality and quantity of these varieties grown on the ridge as compared with those grown in other sections.

According to word just recently received from each of the eight county chairmen, the plantings next spring will range from 400 to 1000 additional acres for each county, if plans mature that are now under way. This will mean a minimum of 5000 more acres for the entire territory, and barring accidents to this year's crop, it will be so done.

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Paradichlorobenzene Useful as Clothes Moth Repellent

A NEW protection against clothes moths has been found by the Bureau of Entomology of the United States Department of Agriculture in the form of paradichlorobenzene, the chemical used in large quantities in the peach growing districts in the control of the peach borer. It has been established beyond question that naphthalene and paradichlorobenzene are among the most dependable substances that can be used in tight containers for protection against all stages of the clothes moth.

Red-cedar chests can be depended on when only very young clothes-moth lavae are present at the time the fabric is placed in the chest. When properly prepared according to recommendations of the department, as frequently issued in bulletin and other printed form, clothing can be safeguarded in red-cedar chests. Chests of Eucalyptus and closets lined with red-cedar wood and in constant use are of no value as protectors against fabric pests. The best protection consists in putting clothes away absolutely clean and without eggs or larvae on them, in tightly sealed containers, which may or may not be impregnated with such repellents as oil of red cedar and camphor. These two oils have a decided value for this purpose, but oil of Eucalyptus and oil of pine are of little or no value. Naphthalene flakes or balls, or paradichlorobenzene, as indicated above, provide additional safety when packed with fabrics or furs in tight containers.

The hired man lit a lantern to go and see his best girl. "Humph!" said the farmer. "When I was young I never went courting with a lantern; I went in the dark."

"Yeh," said the hired man, "and look what you got!"

Profitable Poultry

By Ralston R. Hannas

Lice on Chickens

WITH the coming of the warm spring weather, and especially the warmer weather of summer, chickens begin to be pestered with lice. These pests, it is true, will bother the birds to some extent during the winter, but it is not until warm weather that they begin to be really harmful to them. Unless the birds are treated in some way to relieve them of the lice, the pests will breed rapidly and will so annoy the chickens that egg production cannot be at its best and the vitality of the birds will be lowered.

There are a number of different kinds of chicken lice, of which three or four are the most common. They are the head louse, the body louse, the shaft louse and the wing louse. As the names imply, the lice affect the regions for which they are named, the head lice affecting the head—or rather having for their particular territory the head—the body lice appearing on the body, the shaft lice appearing on the shaft of the feathers, and the wing lice appearing on the wings. The eggs may be seen at the base of the feathers, appearing in large masses.

Of course, there are a number of commercial lice removers on the market, most of which are ineffective. There is a chemical, however, which if properly used will give a remarkable degree of control. This chemical is sodium fluoride, and it may be used either in the powder or liquid form. If the birds are dusted with this material, it must be well distributed so that it will be effective. The United States Department of Agriculture recommends that the pinch method be used, which consists in applying the sodium fluoride to each individual bird as follows: one pinch on the head, one on the neck, two on the back, one on the breast, one below the vent, one on the tail, one on each thigh and one scattered on the underside of each wing when spread. This sounds like a lot of work, but in reality it can be done very quickly. The great disadvantage of this method is that the flouride will get into the mouth and nostrils of the man doing the dusting, causing considerable irritation. A mask, which may be purchased for a small sum, may be worn as a protection. This method is followed quite extensively. One pound of the sodium flouride will be sufficient for 100 hens.

Another method of applying the flouride may be followed, which is quicker and is not so hard on the person giving the treatment as the dusting method. This is the dipping method. It must be done, however, in real warm weather so the birds will not take cold. A washtub may be used and the fluoride dissolved in the water at the rate of one ounce of commercial sodium fluoride to each gallon of water. The wings should be held together over the back with one hand, while the bird is submerged (keeping the head out of the solution), and the feathers ruffled, to allow the solution to get well under the feathers, with the other hand. An individual bird can be treated by this method in from 30 to 45 seconds.

If the sodium is applied properly, one application will kill all lice, and birds should remain free from lice for several months. Commercial sodium fluoride should be used in preference to the pure sodium fluoride, as it is just as effective for this purpose and not so expensive.

Mites

MITES differ from lice in that they are blood suckers, living on the blood of their hosts, the chickens, and not chewers or biters, like the lice that live on the feathers and skin of the chickens. Lice will stay right on the birds, while mites stay on them only at night, staying on the roosts, dropping boards, and in the nests in the daytime.

They may be easily identified, as they have bodies about the size of a pin head or a trifle larger with legs extending very nearly in all directions. The bodies of these parasites are generally red in color, due to the blood they have sucked from the birds. They will sap a bird's vitality as quickly as, if not more quickly than, anything else, and will not only account for a more rapid drop in egg production in the summer season, but will also make a bird liable through its run-down condition to infection from some disease.

Individual treatment for each bird cannot be given as in the case of chicken lice, for the mites are not on the chickens in the day time. The big job is to remove their hiding places. This can be done by spraying into all cracks where there is a possibility of there being mites. The roosts, dropping boards, nests, rear and side walls, and even the roof in badly infested flocks, should be sprayed, paying particular attention to the cracks in these various places. A solution of crude carbolic and kerosene, equal parts, will be found very effective. Certain commercial coal tar disinfectants have also been found to be effective.

There are other kinds of mites than those that have been mentioned, such as the depluming mite and scaly-leg mite. The depluming mite burrows into the skin near the base of the feathers and causes such an itching that the birds will pull their feathers. Sometimes, also, the feathers are chewed off right at the base. Sulphur ointment applied frequently will relieve this.

The scaly-leg mite causes a scaly appearance on the legs of fowls. It may be treated by applying crude petroleum. If the scales do not loosen and drop off in about a month, the treatment may be repeated.

Housecleaning

WE ALL know the fellow who takes a bath every Saturday night, whether he needs it or not. That's what we ought to do with our chicken houses; clean them every so often whether they need it or not—and it is surprising how often they really do need cleaning. Now is the time this cleaning should be done. Just because the birds are running out-of-doors and, on many farms, are not in or near the houses all day, is no reason for not cleaning the houses or postponing the cleaning.

A real bright sunshiny day should be selected for this job. All movable fixtures, such as feed hoppers, nests, water fountain stands, etc., should be removed and cleaned thoroughly outside. They may then be disinfected with a five per cent solution of some good commercial disinfectant and allowed to dry in the sun. Next, walls, windows, muslin curtains—if the open front house with muslin curtains is used—should be swept down. If the roosts and dropping boards can be removed for this purpose, so much the better. The floor should be cleaned thoroughly by removing all litter and sweeping just as clean as possible. When all this has been done, the house should be sprayed with a five per cent solution of some good commercial disinfectant. If desired, the interior of the house may be whitewashed. If this is done, disinfectant should be included in the whitewash. There is no question but that a coating of whitewash adds to the appearance of the house and gives a very clean atmosphere. It need not be applied with a brush; spraying it on is much quicker and every bit as satisfactory. Fresh litter should then be put back in the house and the litter kept clean and dry all summer. The litter ought to be changed at least once a month, and another honest-to-goodness cleaning given again in the fall. There is no question but that a cleaning like this really means dollars and cents to the owner.

Quality in Eggs

EGGS are still more or less plentiful at this season, and a little later on they will not be quite so plentiful. The result will be that there will appear the temptation to hold eggs before selling so that the price will go up some. Here is where the danger lies in that practice: on most farms, that is, general farms, and fruit farms too, where poultry is not given all the attention it should have, the males are permitted to run with the flock in summer as in the spring, when breeding is done. The eggs thus obtained are, therefore, fertile. With the hot weather of late spring and summer, these eggs are very likely to start developing if they are held very long before selling. Eggs should be disposed of twice a week at least, preferably three times a week.

This, then, is one factor that affects quality in table eggs. Another is the fact that quite often hens will steal their nests and lay a number of eggs before the nest is discovered. Many of these eggs will be unfit for use, but sometimes they are included in the lot that is to be sold. This should be watched carefully and avoided. It is a good plan to have a home-made egg candler handy and test all eggs before they are sold. Such a candler is not difficult to make; a piece of stovepipe with a hole in it about the size of an egg will do very well. Set the pipe over the lamp so the hole comes opposite the flame, and by holding an egg up to this hole, a great deal can be determined about the inside of the egg. A normal egg that is fit for consumption will appear clear except for the orange colored yolk, and the air cell will be very, very small if it is a strictly fresh egg, that is, a trifle less than the size of a 10-cent piece in diameter. An egg that is dark or black shows that some embryo growth has taken place, and it is therefore unfit for food.

It is difficult under some circumstances to maintain quality in eggs during the summer months, but it can be done. Hold eggs at a temperature of not higher than 65 degrees, if possible; make sure that all eggs are gathered every night; sell eggs often—twice or three times a week; remove the males from the flock to produce infertile eggs; don't let the eggs set in the sun on the way to market.

Propagation of Fruit Plants

(*Continued from page 36*)

accustomed to believe. As ordinarily used, the term "pedigreed stock" is of little value except as a nice sounding talking point.

There are exceptions to all rules and it is undoubtedly true that there are some exceptions to the above statements. We know that among apples bud sports or mutations sometimes arise. The Collamer rose as a bud sport from the Twenty Ounce and is essentially a Twenty Ounce with a more highly colored skin. A number of such variations or mutations showing an improvement in color have been observed and propagated in the past 50 years. An interesting variation of this type, which was given considerable publicity, occurred in New Jersey on a Delicious tree. This variation was propagated and the introducers of Delicious are now putting out a more highly colored fruit but similar in other respects to the older variety. Since it is clearly recognized that such mutations may occur and produce improved color, it is within the bounds of possibility that they may occur in other directions, for instance, showing different shape or even greater productivity. In deciduous fruits no one has yet clearly demonstrated that selection for increased productivity is feasible. About the only successful selections which have been made in these fruits have been the selection and propagation of certain outstanding color sports which have already been mentioned. In citrus fruits it has been demonstrated that it is highly desirable to select buds from trees producing certain desirable types of fruits, and bud selection in citrus fruits may be quite worth while when it would be an entirely worthless practice with apples or peaches. It is somewhat unfortunate that the word "pedigreed stock" should have been applied to bud selections thus carried out, for the nursery man, growing his plants without sexual propagation, has little, if anything, in common with the breeder of live stock. Vigorous, well grown plants, free from disease and true to name, are a credit to any nurseryman and will be satisfactory to the fruit grower without the added embellishment of a pedigree which means nothing from the standpoint of the actual ancestry of the variety.

Successful Blueberry Culture

(*Continued from page 4*)

of potash. This is used at the rate of 400 pounds to the acre and has increased yields surprisingly well.

Harvesting and Yield

Blueberries are picked as soon as they are fully ripe, as indicated by the full color at the stem end of the fruit. A little practice will soon show a picker how to distinguish between ripe and nearly ripe berries. Usually plantations have to be picked over every six to eight days in order to prevent fruit from becoming over-ripe. Harvest starts about July 1 and ends about August 15 in central New Jersey.

Blueberries have not been cultivated long enough to allow accurate estimate of probable crop. However, small areas have been in bearing nine years and the yield per acre is indicated as follows:

First year.....	None
Second year.....	No commercial crop
Third year.....	30 crates
Fourth year.....	80 crates
Fifth year and thereafter	100 crates

The experience of past years indicates that the cultivated blueberry will replace the wild blueberry in the market at a price at least 50 per cent higher. That is to say, if a retail store had cultivated blueberries at 60 cents per quart side by side with wild blueberries at 40 cents per quart, the former would sell faster, and as a result the store would not deal in the wild blueberries if it could obtain the others.

Blueberry growing offers an unrivaled opportunity to those able to enter the business. The requirements are strict and the details elaborate, because no standard routine has been established as yet. Plants are scarce and suitable land is not to be had in all parts of the country. However, these are really advantages to the man entering the business in a proper frame of mind, because, if it were not for them, any small fruit man could grow blueberries, and they would not be worth growing. Under present conditions, the grower is sure of a fancy price for all the blueberries he can raise, and that is all a real farmer asks.

Mild Winter in Western Canada

WESTERN CANADA has had its mildest winter in 48 years. Every important point throughout western Canada registered higher average temperatures the past winter than normally. In Alberta the mild weather averaged fairly uniform throughout the winter. Calgary had only two days of sub-zero weather.

The owner of the store was trying to give the new boy a little fatherly advice.

"Why, young man, I even started out in life as a barefoot boy."

"Well, I wasn't born with shoes on myself, sir," replied the youngster.—*Good Hardware.*

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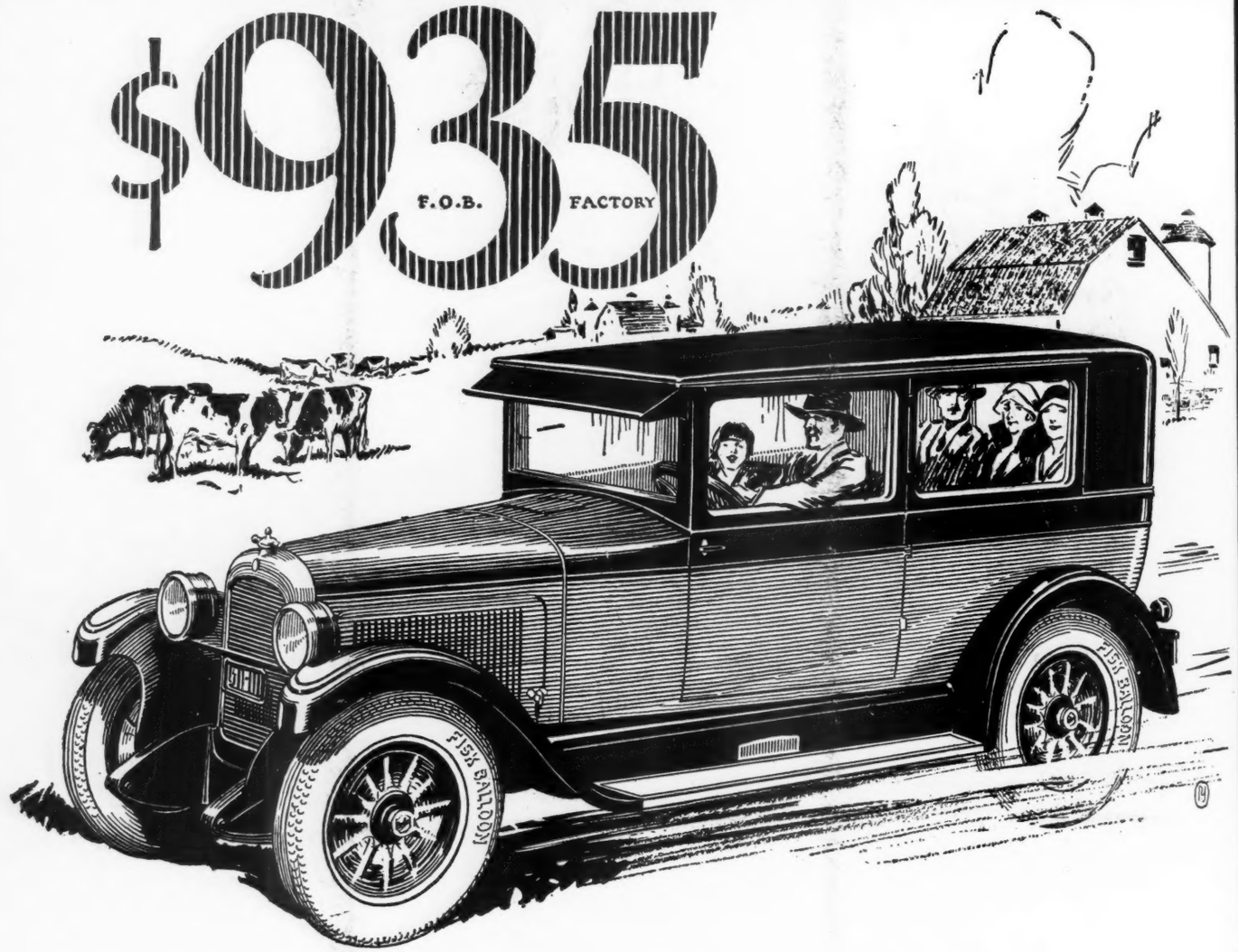

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